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THE DIAGNOSIS AND TREATMENT OF CARDIAC EMERGENCIES

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Among the most alarming of the medical emergencies are those arising from acute conditions within the heart. Immediate treatment is frequently imperative. Fortunately, there are a half dozen drugs used in cardiac emergencies which are now available in sterile solution in single dose ampules, convenient for immediate hypodermic administration. These drugs belong in the kit of every physician. Their proper administration to achieve an optimum therapeutic effect and the emergency conditions which demand their use should be common knowledge.

CARDIAC ARRHYTHMIAS

Probably in no cardiac emergency does death seem more instantly impending than in the Adams-Stokes syndrome. If the ventricles cease to pulsate for as long as eight or ten seconds, cerebral anemia results and the patient suddenly loses consciousness. If the ventricles remain in diastole for more than fifteen seconds, the Adams-Stokes syndrome appears with convulsive seizures accompanying the syncope. The ventricular standstill, if untreated, may continue until sudden death occurs. The diagnosis is not difficult when the patient is seen in an attack. The abnormally slow heart rate, or the absence of the apex beat, and the rapid venous pulsations in the neck due to the uninterrupted auricular action, distinguish it. The syndrome may appear at the onset of complete heart block or when there is a sudden change from partial to complete heart block. It appears occasionally in acute coronary thrombosis when the infarction involves the conduction system. Two such cases have recently come under my observation, one ending fatally.

As an emergency measure in the treatment of a prolonged attack of ventricular standstill, epinephrine hydrochloride (adrenalin chloride) should be injected directly into the heart. A 2½ inch (6 cm.) 22 gage needle may be inserted into the fourth left interspace about 2.5 cm. from the sternal border. From 0.5 to 1.5 cc. of a 1:1,000 solution of epinephrine hydrochloride may then be injected into the ventricular wall or cavity. There is some dispute as to whether it is desirable to inject the drug into the region of the sino-auricular node. During the less severe attacks of convulsive syncope or when the attacks are recurring, from 0.25 to 1 cc. of a 1:1,000 solution of epinephrine should be injected subcutaneously every few hours for as long as is necessary to maintain a heart rate of over 30 beats per minute. The drug stimulates ventricular irritability and shortens the period of diastole. It has an immediate, but not a prolonged, effect. Ephedrine, barium chloride and atropine sulfate have been used to control Adams-Stokes seizures, but they have not produced as uniform results as has epinephrine.

A rapid ventricular rate, approaching 200 beats per minute, if prolonged, will at times induce alarming symptoms in persons without organic heart disease. Palpitation, dyspnea, vertigo, syncope and severe precordial pain may result. When a rapid ventricular rate is superimposed on organic heart disease such as mitral stenosis or aortic regurgitation, acute congestive heart failure may supervene and if the ventricular rate is not decreased it may cause death.

If the rapid beating of the ventricles is due to paroxysmal auricular tachycardia originating in the sinus node, the attack may occasionally be terminated by vagus pressure. If this procedure does not immediately reduce the ventricular rate, acetyl-beta-methylcholine hydrochloride (mecholyl) should be administered subcutaneously. The optimum dosage varies with the age and weight of the patients, one-sixth to one-third grain (0.01 to 0.02 Gm.) being sufficient for young or light weight patients and one-half to 1 grain (0.03 to 0.06 Gm.) being necessary for elderly or obese persons. In a majority of cases the heart will resume its normal rate within fifteen minutes. If it does not do so within two minutes, the site of the injection may be massaged to hasten absorption. If this is not effective, carotid pressure may be applied while the drug is still active.[1] If the initial dose does not check the rate, a second dose may be administered after the lapse of twenty or thirty minutes. Because the drug produces marked stimulation of the parasympathetic nerves, the patient, to avoid fainting, should be lying down during and immediately after the injection. Disagreeable symptoms such as flushing, salivation, profuse perspiration, nausea, vomiting and occasionally dyspnea, precordial pain or collapse may accompany the action of the drug. These symptoms, if alarming, can be instantly checked by the intravenous administration of atropine sulfate 1/100 grain (0.0006 Gm.). The use of the drug is contraindicated in cases of bronchial asthma and in cases of arteriosclerosis with hypotension, angina pectoris or recently healed myocardial infarction. It is usually not effective in cases of tachycardia in which the rapid ventricular action is produced by ectopic stimuli.

In all cases of paroxysmal ventricular tachycardia as well as in those cases of paroxysmal auricular tachycardia in which mecholyl is either contraindicated

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1. Starr, Isaac, Jr.: Acetyl-β-Methylcholin: IV. Further Studies of Its Action in Paroxysmal Tachycardia and in Certain Other Disturbances of Cardiac Rhythm, Am. J. M. Sc. 191:210-224 (Feb.) 1936.

or not effective, quinidine sulfate should be given orally, from 3 to 6 grains (0.2 to 0.4 Gm.) every two hours for six or more doses. I have frequently given up to 45 grains (3 Gm.) of quinidine sulfate during a twenty-four hour period without its having produced untoward effects. However, when massive doses of this drug are to be used it must be fully understood that the patient should first be tested for quinidine idiosyncrasy. If the drug is tolerated, the patient should remain under observation, at rest in bed, during the course of treatment. Electrocardiograms should be taken at intervals in order to note any toxic effect of the quinidine appearing in a prolongation of the conduction time, which would call for the discontinuance of the drug.

In the treatment of paroxysmal auricular fibrillation the use of quinidine sulfate is specifically indicated. Quinidine, unlike mecholyl, does not slow the heart rate by a vagal effect but acts directly on the heart muscle, decreasing its irritability and conductivity and prolonging the period of diastole. Its administration is contraindicated in cases of long standing or permanent auricular fibrillation because of the possibility that with the restoration of normal auricular pulsation portions of mural thrombi might be detached and be carried into the circulation. When the ventricular rate is accelerated in a case of chronic auricular fibrillation, digitalis should be administered in sufficient amounts to slow the rate.

In paroxysmal auricular flutter, digitalis therapy will change the flutter to auricular fibrillation in about 50 per cent of the cases. The withdrawal of the digitalis may then be followed by a spontaneous cessation of the fibrillation. If this procedure is not successful, the administration of quinidine sulfate may restore a normal rhythm.

DIGITALIS

The most generally accepted method of digitalis therapy is the oral administration of standardized powdered digitalis leaves in tablets of 1½ grains (0.1 Gm.). As to the value of using digitalis preparations other than the standardized powdered leaf, I am in hearty agreement with Christian's[2] statement: "Tincture of digitalis may be substituted in mouth dosage for the powdered leaves if for any reason that seems desirable; rarely, however, in my experience is that the case; if for no other reason, the convenience of pills and capsules would give a preference to powdered leaves over the tincture; however, it has always seemed to me that the whole leaf has a therapeutic superiority to the alcohol soluble portions present in the tincture. . . . At present there is no advantage to be obtained by using any other than Pharmacopeial preparations of digitalis, notwithstanding the many proprietary digitalis preparations that are being offered with great enthusiasm to the medical profession, their dispensers making many claims for their superiority, claims that seem not justified as far as my own clinical experience goes."

The dosage which will secure the digitalization of a patient and thereby produce a therapeutic effect may be roughly computed on the basis of the patient's weight. Provided the patient has not received digitalis within the previous two weeks, the dosage should approximate 1½ grains for every 10 pounds (4.5 Kg.) of body weight, plus 1½ grains for each day during the period of digitalization. That is, if a patient who weighs 150 pounds (68 Kg.) is to be digitalized over a two day period he will receive approximately 25 grains (from 20 to 30 grains [1 to 2 Gm.]). From 12 to 15 grains (0.8 to 1 Gm.) may be given in divided doses at six or eight hour intervals during the first twenty-four hours and the remainder in divided doses during the subsequent twenty-four hours. If the need for rapid digitalization is urgent and the patient has not received digitalis within the previous two weeks, he may be given as much as 7½ grains (0.5 Gm.) at four hour intervals for two or three doses, followed by 3 grains (0.2 Gm.) at eight hour intervals until the requisite dose has been given. It should be borne in mind, however, that such massive doses of digitalis and rapid digitalization of a patient as have just been outlined are to be resorted to only in emergency cases and then only when the patient can be kept under close observation. In all other cases digitalization should proceed more slowly and cautiously.

The computation of the dosage by body weight is only an approximation. Relatively more digitalis should be given to children, to light weight adults and to patients with a marked degree of decompensation. Children in particular require fairly large doses of the drug to obtain a therapeutic effect. Patients of advanced years usually require less digitalis than their weight would indicate. When edema is present, its added weight should not be included in the body weight on which the digitalis dosage is computed; instead, the patient's average weight for the year prior to the onset of the edema may be taken as a basis.

As a patient is not fully digitalized until a state of saturation has been reached, the dosage in emergency cases should be sufficient to produce either a therapeutic effect or early evidence of approaching toxicity. The drug should not be withdrawn, however, solely because of a single spell of vomiting or headache. In cases of congestive heart failure, vomiting may be due to congestion of the gastric mucosa and therefore be a manifestation of the cardiac failure, rather than of the toxicity arising from the action of the drug. If vomiting prevents the oral administration of digitalis, equivalent amounts of the drug in solution may be given intravenously until it is tolerated by the oral route.

In order to maintain a patient in a state of therapeutic digitalization it is necessary that he receive daily an amount of the drug equivalent to that which he excretes. This is generally about 1½ grains daily. If this dose is not effective in slowing the heart rate in a case of rapid ventricular action or in improving the circulation in a case of congestive heart failure, 3 grains may be given every other day and 1½ grains on the alternate days. In rare cases it may be necessary to give 3 grains daily until the heart becomes compensated. It is important that the particular maintenance dose which will achieve the optimum therapeutic effect be determined for each individual patient by both clinical and electrocardiographic observations.

In the presence of a toxic state arising from the overdigitalization of the patient, there will usually be manifested clinically a slowing of the heart to a rate of 60 beats per minute or less, and the appearance of premature contractions producing a coupling of the beats, heard on auscultation. Certain gastrointestinal, ocular and neurologic symptoms may also appear such as nausea, vomiting, dimness of vision, inability to focus the eyes, restlessness and disorientation. The electro-

2. Christian, Henry A.: Drug Treatment of Cardiac Decompensation, J. A. M. A. 108: 44-46 (Jan. 2) 1937.

cardiogram will show an exaggeration of the T wave deflection associated with a "digitalis effect"; a prolongation of the PR interval, indicating an auricular-ventricular block; premature ventricular beats occurring in couplets (bigeminy), and, in grave toxic states, the appearance of ventricular paroxysmal tachycardia. It is because the electrocardiogram shows definite evidences of the approach of a state of digitalis intoxication of the myocardium that the administration of the drug should be controlled by frequent electrocardiographic readings. When clinical or electrocardiographic signs of overdigitalization appear, the drug should be withheld for a day or two and its administration resumed in decreased dosage.

Digitalis acts directly on the heart, (1) depressing the function of the sino-auricular and auriculoventricular nodes, (2) contracting the muscle fibers, (3) decreasing the size of the chamber walls, (4) lessening auricular and ventricular irritability, (5) prolonging diastole and (6) increasing the force of systole.[3] The clinical results of digitalis therapy are usually manifested in a slowing of the heart rate and in a general improvement of the circulation. In cases of failing or dilated hearts the administration of digitalis frequently results in an increase of the cardiac output and the relief of venous congestion. Occasionally, however, fibrosis of the myocardium is so extensive that digitalis cannot restore compensation. When hyperthyroidism is the underlying cause of cardiac dilatation and failure or of a rapid ventricular rate, the results of digitalis therapy will be disappointing until the thyroid condition has received appropriate treatment.

CONGESTIVE HEART FAILURE

Acute congestive heart failure is one of the most commonly seen conditions demanding emergency treatment. Cases of organic heart disease such as valvular incompetency and stenosis may remain compensated under a normal regimen; but when the burden of infection, fatigue, excitement, prolonged nervous strain or a rapid ventricular rate is added, congestive heart failure may suddenly appear. If the precipitating factor is not removed, the attack of failure may develop rapidly into an emergency.

In left ventricular failure, dyspnea, orthopnea and air hunger appear and increase in severity with the degree of failure. The associated pulmonary congestion may give rise to a productive cough and to hemoptysis. Patients with failure of the left side of the heart are subject to alarming and not infrequently fatal attacks of acute paroxysmal dyspnea. The attacks, which are usually nocturnal, are marked by extreme dyspnea and a cough which is productive of profuse frothy blood-tinged sputum. The blood pressure is at first elevated but later falls. As the pulmonary edema becomes acute, circulatory collapse occurs accompanied by pallor and cyanosis, marked perspiration and a rapid feeble radial pulse. If treatment is delayed, death may ensue. The most important emergency measure is the subcutaneous administration of morphine sulfate, one-fourth grain (0.015 Gm.), repeated in fifteen minutes if relief has not been obtained. If the morphine is not effective in abolishing the attack aminophyllin (theophylline with ethylenediamine), $\frac{1}{100}$ grain in 20 cc. of physiologic solution of sodium chloride, should be administered intravenously, slowly during a five minute period. Clinical studies have shown that the drug causes a decline in the intrathecal and venous pressures with a subsequent diminishing of the dyspnea.[4] Oxygen when available should be administered promptly. Phlebotomy of from 300 to 500 cc. of venous blood is frequently followed by striking improvement. As to the use of digitalis in acute paroxysmal dyspnea, Wolferth[5] has recently expressed an opinion which I have long held on the ineffectiveness of digitalis therapy in an acute emergency condition. He states: "I find that many physicians in treating attacks of paroxysmal cardiac dyspnea are apt to give hypodermic injections of digitalis. The dosage usually employed ranges from 1½ to 3 grains. Although . . . digitalis is often useful as a preventive measure it must be given in therapeutically effective dosage. I object to its use during an attack for the following reasons: (1) The dosage is usually too small to be effective; (2) even though enough be given, its action is too slow to combat an emergency, and (3) the use of digitalis may divert attention from more effective measures that should be employed."

When right ventricular failure is predominant there are dyspnea, marked fatigue, gastric and abdominal flatulence, nausea, venous engorgement, enlargement and tenderness of the liver, ascites, edema of the extremities and at times anasarca and hydrothorax. When a rapid elimination of the edema is necessary salyrgan, 1 cc. of a 10 per cent solution, should be injected intravenously, with or without the oral administration of ammonium chloride, 22½ grains (1.5 Gm.) four times daily, in enteric coated capsules of 7½ grains. The initial dose of salyrgan may be repeated after the lapse of from two to three days, when, if needed, the dose may be doubled. If large accumulations of transudates are present in the thoracic or peritoneal cavities, it may be necessary to give the patient prompt relief by aspirating the fluid, in which case a thoracentesis or an abdominal paracentesis should be carried out. The Karell diet should be instituted at once. Oxygen should be administered as an emergency measure, and morphine sulfate should be given freely to relieve the patient of dyspnea and nervousness. The slow intravenous administration of from 50 to 100 cc. of a hypertonic solution of dextrose, of 50 per cent concentration, has value in some cases in that it aids the failing heart muscle in replenishing lost glycogen. Absolute bed rest should be maintained. Patients, even children, find an upright or semirecumbent position more comfortable than recumbency, as pressure from the engorged liver is less distressing. The use of a cardiac bed, when available, is of value.

In extreme cases of failure involving either the left or the right side or both sides of the heart when the circulation is gravely embarrassed, the patient must be given immediate relief. Strophanthin should be administered intravenously, $\frac{1}{100}$ grain, provided the patient has not been properly digitalized as evidenced by an electrocardiogram. If the patient has been taking small doses of digitalis during the preceding fourteen days,

3. Stewart, H. J.; Crane, N. F.; Deitrick, J. E., and Thompson, W. P.: Action of Digitalis in Compensated Heart Disease, Arch. Int. Med. **62**: 547-568 (Oct.) 1938. Stewart, H. J.; Deitrick, J. E.; Crane, N. F., and Wheeler, C. H.: Action of Digitalis in Uncompensated Heart Disease, ibid. **62**: 569-592 (Oct.) 1938. White, Paul Dudley: Heart Disease, ed. 2, New York, Macmillan Company, 1937, pp. 547-556.

4. Greene, J. A.; Paul, W. D., and Feller, A. E.: The Action of Theophylline Ethylenediamine on Venous and Intrathecal Pressures and on Bronchial Obstruction, J. A. M. A. **109**: 1712-1715 (Nov. 20) 1937.

5. Wolferth, Charles C.: The Diagnosis and Treatment of Paroxysmal Cardiac Dyspnea, M. Clin. North America **22**: 1735-1746 (Nov.) 1938.

the dose of strophanthin must be regulated accordingly. Strophanthin exerts an action on the heart similar to that produced by digitalis; but, unlike digitalis leaves, it acts almost at once. Its full effect is produced in about one hour and is prolonged for from twelve to twenty-four hours. The initial dose of strophanthin may be followed by two subsequent doses at intervals of from eight to twelve hours. When possible an electrocardiogram should be taken to determine the degree of digitalis effect. After the acute stage has subsided the patient may be put on the oral administration of powdered digitalis leaves.

The edema of nephritic origin is sometimes confused with the edema arising from cardiac conditions. Within the month three patients with marked edema have come under my observation. All three patients had had prolonged digitalis therapy with no abatement of their symptoms. A carefully taken history and laboratory tests showed glomerulonephritis to be the underlying disease in each case. One patient had been taking bromides for months and had marked bromide dermatitis complicated by multiple ulcerations of the lower extremities.

A discussion of congestive heart failure should not be closed, I believe, without making clear the distinction between cardiac failure and a failure of the peripheral circulation. Peripheral failure produces the symptoms and signs of collapse and shock, including pallor, perspiration, cold clammy skin, weak heart sounds, rapid thready pulse and low blood pressure. These phenomena are seen occasionally in surgical cases, in severe hemorrhage, in dehydration, in coronary thrombosis, in arterial embolism and in other conditions which for any reason produce a sudden decrease in the volume of the circulating blood or a sudden collapse of the vascular bed. In certain of these cases the heart itself may be entirely normal in its capacity to function properly, but the vascular system fails to return a normal volume of blood to the heart.

CIRCULATORY FAILURE

The circulatory type of failure may require either of two kinds of treatment, depending on the factor which has produced the collapse. If a sudden decrease in the blood volume from hemorrhage or dehydration has been the precipitating factor, a transfusion of whole blood or the intravenous administration of small doses of 20 per cent dextrose solution or of salt solution is beneficial. If, however, depression of the central nervous system has been a contributing factor in the production of the shock through loss of vascular tone, drugs which act on the central nervous system should be administered, such as hot coffee, brandy, strychnine sulfate, one-sixtieth to one-fortieth grain (0.001 to 0.0015 Gm.) subcutaneously, or caffeine with sodium benzoate, 7½ to 15 grains subcutaneously, or intravenously if a more prompt response is desired. These drugs, as well as nikethamide (coramine), metrazol, theobromine, camphor and aminophyllin, have at times been regarded as cardiac stimulants, but it is now generally accepted that their value lies in the effect which they produce on the peripheral vascular system or on the respiratory center, secondarily to a primary effect on the central nervous system. White [6] has pointed out that although caffeine has an important stimulating effect on the nervous system and vasomotor center and nikethamide and aminophyllin often stimulate and regulate a depressed respiratory center, they are not known to have a direct effect on the action of the myocardium. None of these drugs, therefore, should be substituted for digitalis in the treatment of congestive heart failure. Digitalis, however, is not known to exert a direct effect on the vascular system and therefore should not be administered in circulatory failure. It should be clearly understood by surgeons as well as by clinicians that digitalis therapy not only has no value in collapse or surgical shock but may even do harm in that it slows the heart rate. Much of the confusion concerning the results of digitalis therapy in coronary thrombosis has, I believe, come from an attempt to institute digitalization while vascular collapse was a predominant factor in the clinical picture. In the presence of shock associated with low venous pressure the use of digitalis is contraindicated.

CORONARY THROMBOSIS

The syndrome of acute coronary thrombosis is too well known to be discussed in detail. If pain is present, its continued intensity and prolonged duration and the ineffectiveness of the nitrites to control it, will differentiate it from the pain of angina pectoris. Pain may be absent in coronary thrombosis, and intense dyspnea may be the striking symptom. Peripheral vascular failure with signs and symptoms of collapse and shock may be present without pain or dyspnea. On even a tentative diagnosis of coronary occlusion, the patient should be put at complete rest in bed. If within twenty-four or thirty-six hours signs of infarction appear, such as a rise in temperature, an elevation of the leukocyte count and a pericardial friction rub, the patient should remain at rest for several weeks. The important drug in the emergency treatment of acute coronary thrombosis is morphine sulfate, which should be given promptly and in sufficient amounts to quiet the patient and to relieve him of pain. From one fourth to one half grain may be given subcutaneously and the dose repeated if necessary. If there is cyanosis, rapid heart action, dyspnea, orthopnea or other signs of myocardial anoxemia, oxygen in concentrations of from 50 to 80 per cent should be administered by means of a tent. When dyspnea is persistent or when vomiting is producing dehydration, the intravenous administration of a hypertonic solution of dextrose, from 50 to 100 cc. of a 50 per cent solution, should be carried out slowly and cautiously and repeated once or twice daily as needed. Caffeine with sodium benzoate, 7½ grains, may be given intravenously if there is circulatory collapse or shock. The intracardiac or subcutaneous injection of epinephrine should be resorted to in the rare instances in which the Adams-Stokes syndrome complicates coronary occlusion. Quinidine sulfate should be given orally when there is a rapid ventricular rate, but the drug should be administered guardedly. The use of mecholyl is contraindicated in the presence of coronary disease. Digitalis therapy has no place in the treatment of coronary thrombosis, except when auricular flutter or chronic auricular fibrillation is present with a rapid ventricular rate or when congestive heart failure has supervened. It should be borne in mind that massive doses of digitalis are not well tolerated during the healing stage of myocardial infarction. It should also be borne in mind that in an occasional heart there are extensive areas of coronary sclerosis, myocardial degeneration and massive infarction which leave no cardiac muscle for drugs to act on.

6. White, Paul Dudley: Heart Disease, ed. 2, New York, Macmillan Company, 1937, pp. 557-558.

PERICARDITIS

A cardiac emergency occasionally arises in cases of acute pericarditis when a rapid accumulation of fluid in the pericardial sac causes marked cardiac compression. The forms of acute pericarditis in which effusions may accumulate in sufficient amounts to impede the action of the heart are (1) purulent pericarditis, secondary to a pyogenic infection such as empyema, pneumonia, an intrathoracic abscess or septicemia; (2) fibrinous pericarditis, associated with the rheumatic and other nonpurulent infections, and (3) tuberculous pericarditis, seen only when tuberculosis is present elsewhere in the body. As the cardiac compression develops, the force of the ventricular contractions is diminished and signs of circulatory embarrassment appear. The venous pressure increases and the veins of the neck appear dilated and engorged. The arterial pressure falls and the pulse volume is diminished. The heart sounds become distant and faint. The area of cardiac dulness is increased, usually to the right and to the left. A roentgenogram of the heart will show a globular contour with a bulging of both lower angles. Extensive pericardial effusion of rheumatic origin frequently gives rise to dyspnea, orthopnea, cyanosis and precordial pain. Ewart's sign, due to compression of the left lung, may appear at the angle of the left scapula as dulness, bronchial breathing and bronchophony. A to and fro friction rub may sometimes be heard over the base of the heart. A rapidly accumulating pericardial effusion is generally accompanied by an exacerbation of the symptoms of the primary infection.

Treatment should be directed both to the relief of the cardiac compression and to the control of the underlying condition, whatever the infection may be which is responsible for the acute pericarditis. If pain is present and severe, morphine sulfate from one-eighth to one-fourth grain (0.008 to 0.016 Gm.) should be administered subcutaneously. If the pain is not severe, codeine, the salicylates or the bromides may be given. When pericardial effusion is accompanied by marked circulatory embarrassment, pericardiocentesis promptly carried out may be a life-saving measure. The aspiration of even a relatively small amount of the fluid will often relieve the patient of his distress.

A favorable site for the puncture is in the fifth interspace at a point 1 or 2 cm. within the left border of cardiac dulness, as determined by percussion or by a roentgenogram. Local anesthesia of the site is desirable. An aspirating needle of medium caliber is inserted backward and inward, slowly penetrating to a depth of from 3 to 5 cm., with suction applied frequently to obtain fluid. If no fluid can be aspirated, the needle should be tilted at various angles, partially withdrawn, or completely withdrawn and inserted elsewhere. In children or young adults a safe and convenient site for the puncture is the left posterior part of the chest wall in the seventh or eighth interspace at a point in the midscapular line. The patient's left arm should be raised. The needle will have to be inserted to a depth of from 5 to 8 cm. It is usually not necessary to repeat the pericardiocentesis. Occasionally, however, with rheumatic patients the fluid must be aspirated every few days for a limited period and with tuberculous patients every week or two for a much longer time.

During pericardiocentesis of a patient with purulent effusion it is sometimes necessary, if the pus is thick, to substitute a trocar or a needle of larger caliber for the aspirating needle with which the procedure was begun. When pus is discovered during the course of a pericardiocentesis, it is imperative that the surgical procedure of pericardiotomy be instituted at once and that the pericardium be drained at its base. As recovery depends on instituting drainage early in the course of purulent pericarditis, an exploratory pericardiocentesis should be carried out when pericardial effusion is suspected in cases of pyogenic infections. However, before these measures are resorted to in cases in which cardiac compression has not yet developed and the infectious process is largely restricted to the pericardium, sodium cacodylate from 5 to 8 grains (0.3 to 0.5 Gm.) in sterile solution should be injected intravenously. This dose with an additional 2 or 3 grains (0.1 or 0.2 Gm.) a day should be repeated daily for three or four successive days. If a definite cessation or subsidence of the effusion does not occur, a pericardiocentesis should then be resorted to.

In cases of pericardial effusion arising from a nonpyogenic infection, when the circulation is not gravely embarrassed, a delay of thirty-six or forty-eight hours will in many instances show a spontaneous subsidence of the effusion coincidental with an abatement of the underlying infection. This spontaneous improvement is frequently seen in cases of rheumatic pericarditis. Pericardiocentesis in these cases should therefore be restricted to those patients whose cardiac compression has resulted in marked circulatory embarrassment.

EMBOLISM

The emergencies arising from arterial embolism within the systemic circulation are inextricably related to cardiac conditions, as the formation of the emboli occurs in the chambers of the heart. Two predisposing factors in related sequence usually contribute to the presence of systemic arterial emboli. The first is a slowing of the blood stream within the heart chambers, due to mitral stenosis, long standing auricular fibrillation, or dilatation and functional failure of the myocardium. The resulting stasis favors the formation of mural thrombi. The second contributing factor is the subsequent restoration of normal rhythm or myocardial function, which results in more forcible contractions of the chamber walls, a breaking up of the mural thrombi and the expulsion of the detached portions into the systemic circulation. The ultimate destination of the emboli, according to clinical experience, will be lodgment within the spleen, kidneys or other parenchymal viscera, within the brain, the intestinal walls or the myocardium through the coronary circulation, or in the arteries of the extremities.

Pulmonary emboli may arise in either of two ways. They may be detached from mural thrombi within the right auricle or ventricle, whence they will inevitably be propelled into the pulmonary circuit unless there exists a congenital patency of the auricular or ventricular septum, in which case they may enter the left side of the heart and subsequently the systemic circulation. However, in the majority of cases pulmonary emboli originate in thrombosed veins, usually the larger veins of the thigh or pelvis, which often are apparently free from evidences of concomitant phlebitis. It is thought that three factors play a part in the formation of a thrombus within a vein: (1) damage to the vas-

cular wall, (2) an increase in the coagulability of the blood and (3) a decrease in the velocity of the venous blood flow. Pulmonary embolism is not infrequent in cases of heart failure and of chronic invalidism among the older age groups when venous pressure and prolonged circulation time are present. It also occurs as a postoperative or puerperal accident.

Embolic deposits within the parenchymal organs cause areas of infarction. The spleen, kidneys and lungs tolerate one or more infarctions if they are not massive, and a restitution of approximately normal function not uncommonly occurs. The brain, if vital regions are not involved, will also tolerate small areas of infarction. In the emergency treatment of embolic deposits in the parenchymal organs, absolute rest in bed and the complete relief of pain are of prime importance. Morphine sulfate from one-fourth to one-half grain should be given subcutaneously and repeated if necessary. In pulmonary infarction the patient should be placed in an oxygen tent. Supplying him with an adequate amount of oxygen not only will lessen the strain on the circulation but will add materially to his comfort and will ease difficult respiration. Shock and collapse, which invariably accompany all forms of massive arterial occlusion and multiple embolic deposits, should receive appropriate therapy, as previously outlined in the discussion of the treatment of peripheral vascular failure.

Embolic occlusion of the arteries of the extremities and of the intestine results in the development of gangrene. It is in these cases that early diagnosis and prompt surgical intervention are of the utmost importance in saving the patient's life. When embolic occlusion involves the extremities there is frequently an associated spasm of contiguous arteries. If untreated, the spasm may extend the area of gangrene. The intravenous injection of papaverine hydrochloride one-half grain will frequently abolish the associated spasm. The extremity which is affected should be kept warm but should not have direct heat applied to it. When only a small artery is involved, the development of a collateral circulation may prevent the development of gangrene. Unfortunately, subsequent emboli frequently appear in the circulation to further endanger the life of the patient.

SUMMARY

In the treatment of the cardiac emergencies, the time element is often of inestimable importance. The proper drug if administered promptly will frequently give immediate relief and may in some cases be a means of saving the patient's life. It is advisable for every physician when confronted by a cardiac emergency to have certain drugs available for instant use.

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The Spirit of Aesculapius.—The progress of medicine has ever been from the temple to the medical school. Though the statue of Aesculapius was carried from Epidaurus to Tiber Island, it was something more important that Rahere brought from Tiber Island to England; it was the spirit of Aesculapius opening the path to the medical school. Man is always too ready to mistake the symbol for the reality; the stone on which the laws are graven is apt to become more sacred than the laws themselves; but the statue of Aesculapius is unavailing if the spirit dies.—Langdon-Brown, Sir Walter: Thus We Are Men, New York, Longmans, Green & Co., 1939.

PUERPERAL INFECTION WITH VEGETATIVE ENDOCARDITIS

REPORT OF SULFANILAMIDE THERAPY IN TWO FATAL CASES DUE TO STREPTOCOCCUS HAEMOLYTICUS GROUPS B AND C

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During a recent study of sulfanilamide therapy in puerperal infection[1] two cases of endocarditis due to Streptococcus haemolyticus groups B and C, respectively, were encountered. Since fatal infection due to group B is infrequent and has not been previously reported in the case of group C, report of these cases should be of interest.

REPORT OF CASES

CASE 1.—B. R., an Italian housewife aged 28, was admitted August 29, 1938, to the service of Dr. Charles A. Gordon at the Kings County Hospital. Her last menses occurred June 26. Two months later she suffered from backache and passed clots of blood by vagina. Within an hour she had a chill, followed by fever. Vaginal examination showed a sanguinopurulent discharge, a soft cervix which admitted the finger tip and a soft, tender uterus the size of a three months pregnancy. The leukocyte count was 20,000 with 87 per cent polymorphonuclears; the hemoglobin content was 80 per cent and red cell count 4,100,000. A diagnosis of septic abortion was made.

Removal of possible retained secundines was not undertaken because of the severe uterine infection. On September 4, although the fever had abated somewhat, sulfanilamide therapy was instituted. During the next four days a total of 320 grains (21 Gm.) was given. Chemotherapy was discontinued when it was found that the hemoglobin had fallen to 45 per cent and the red cell count to 2,200,000. The temperature during the following week was septic in type, rising to 105.4 F. and falling to 99.6 F. intermittently, as shown in the chart. The patient was surprisingly free from subjective symptoms. Vaginal bleeding of moderate amount occurred almost daily. Transfusions of blood were given every second or third day. In spite of the large quantity of blood (4,275 cc.) which the patient received, the hemoglobin never rose above 58 per cent.

Four blood cultures taken during the three weeks after admission were positive for Streptococcus haemolyticus group C. The source of the bacteremia was thought to be pelvic thrombophlebitis. After the report of the first positive blood culture on September 11, sulfanilamide was again administered. Massive doses were now given, and within ten days the patient received 890 grains (58 Gm.). In spite of the intensive chemotherapy, the patient grew progressively worse.

On the twenty-first day after admission a rough systolic murmur was heard at the apex, and the spleen was enlarged. Bacterial endocarditis was now suspected. September 29 the patient complained of sudden pain in the lower part of the back and in both legs and died shortly afterward.

Necropsy was performed by Dr. Casper C. Burn. About 500 cc. of straw-colored fluid was found in the right pleural cavity and 300 cc. in the left pleural cavity, and about 50 cc. in the peritoneal cavity.

The heart weighed 270 Gm. The epicardial surfaces were smooth and glistening. The mitral valve was the seat of a large friable vegetation. One of the leaflets had been destroyed by an ulcerative process; here the chordae tendineae were ruptured and detached. The greater part of the free border of the valve was involved in the necrotizing process. The remaining portion of the valve showed no evidence of old or chronic endocarditis,

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1. Gordon, C. A., and Rosenthal, A. H.: Sulfanilamide Therapy in Severe Puerperal Infection, Surg., Gynec. & Obst. 69:631 (Nov.) 1939.

as it was thin and velamentous. The other valves appeared normal. On microscopic examination small abscesses were found throughout the myocardium.

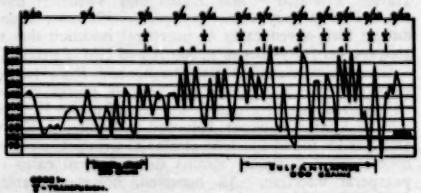
The spleen weighed 300 Gm. and contained a large anemic infarct. A small infarct was present in one kidney. A large white saddle embolus was lodged at the bifurcation of the aorta, completely occluding the lumen. The iliac arteries were collapsed and bloodless.

The uterus was slightly enlarged; the fundus was globoid and contained a large polyp-like mass of placental tissue, covered with a yellowish necrotic exudate which extended into the myometrium. The remaining endometrium was dull, gray and covered with exudate.

The streptococcus recovered in the blood culture was identified serologically as group C.[1a] Following the procedure of Lancefield,[2] the hydrochloric acid extract (tenth-molar) of a broth culture was neutralized to litmus and then centrifuged; the clear supernatant fluid was tested against antiserums to streptococcus groups A to H inclusive. A clearcut precipitin reaction was obtained with group C antiserum.

Although no evidence of pelvic thrombophlebitis was found on gross or microscopic examination, it is probable that the retained infected placental tissue was the source for the invasion of the blood stream by the streptococcus, with subsequent development of endocarditis and persistent bacteremia.

CASE 2.—C. H., a Negro woman aged 24, was first observed in the obstetric clinic. A history of rheumatic fever with cardiac involvement during childhood was obtained. She had had four previous deliveries. The first two pregnancies and labors were uncomplicated save that she went into premature



Temperature curve in case 1 showing the septic clinical course of the patient and the sulfanilamide therapy.

labor at seven months and delivered infants weighing 5 pounds (2.3 Kg.) each. During her third pregnancy she suffered what appeared to be a beginning attack of cardiac decompensation with arrhythmia, but subsequently she was delivered without cardiac symptoms. The fourth pregnancy and labor were uncomplicated. The last menstrual period was on May 15, 1938. The patient had complained of dyspnea and orthopnea since the second month of pregnancy.

Examination revealed an enlarged heart with presystolic and systolic apical murmurs. X-ray examination of the chest showed a globular heart. A diagnosis of rheumatic heart disease with mitral stenosis and insufficiency was made. During the remainder of her pregnancy the patient suffered headaches, spots before her eyes, edema and a rise in blood pressure to 140 systolic, 84 diastolic.

The patient was admitted to the service of Dr. Charles A. Gordon Jan. 11, 1939, and was delivered spontaneously the next day of a 7½ pound (3.4 Kg.) fetus with use of local anesthesia. There was no change in her cardiac status during labor. Her immediate postpartum course was uneventful. On the fifth day post partum there was a rise in temperature to 104 F. with a rise in pulse rate. The blood count was normal and the patient felt well. However, both blood and uterine cultures were positive for Streptococcus haemolyticus group B. She was given a blood transfusion of 250 cc. and received 20 grains (1.3 Gm.) of sulfanilamide every four hours.

The patient continued to have a septic type of fever but otherwise appeared well. Sulfanilamide therapy was discontinued on the twelfth day post partum because of headache. At this time her condition was improved and the blood culture was negative. The sulfanilamide titer reached its highest level of 12 mg. after 820 grains (53 Gm.) had been given over a period of seven days. On the sixteenth day post partum she had a chill and a rise in temperature to 104 F. A blood transfusion of 250 cc. was given and sulfanilamide therapy was resumed. A septic type of fever with but few other symptoms continued thereafter.

Four blood cultures taken over a period of six days were negative. February 4, however, hemolytic streptococci were found and subsequent cultures were consistently positive for this organism. Sulfanilamide therapy was again stopped on the twenty-sixth day post partum. By this time a total of 2,250 grains (146 Gm.) had been given.

On the thirty-second day post partum a change in the cardiac status of the patient was noted. The apex was beating violently; the murmurs had changed in quality and were now heard over the entire chest. A diagnosis of acute bacterial endocarditis was made. Petechiae were not seen in the conjunctivas until nine days later. Blood and uterine cultures continued to be positive for the hemolytic streptococcus.

On the forty-third day post partum the patient was started on sulfapyridine therapy and received a total of 247 grains (16 Gm.) in three days. On the day after this medication was instituted clinical signs of a cerebral embolism appeared, and two days later she died.

Necropsy was performed by Dr. Casper C. Burn. Several small petechiae with white centers were noted in the conjunctivas. One hundred and fifty cc. of clear straw-colored fluid was found in the left pleural cavity and 75 cc. in the right. Many petechial and purpuric hemorrhages were scattered over the pleural surfaces of the lungs, which presented on section small areas of consolidation.

The heart weighed 370 Gm. The valves on the right side of the heart were thin and delicate. The mitral valve adjacent to the anterior papillary muscle was ulcerated. To it was attached a large friable, fungating vegetation. Directly in apposition there was a smaller vegetation. The ulceration beneath the larger vegetation extended for a short distance into the wall of the left auricle. The aortic cusps were regular and not fused. On the corpus arantii of the anterior valve leaflet there was a small, fresh friable vegetation. The myocardium appeared mottled with pale red and light brown areas. Minute circumscribed opaque areas were found in the wall of the left ventricle a few millimeters beneath the epicardium. A small infarct was observed in one kidney and several infarcts were present in the spleen.

The ovaries and tubes appeared normal. The uterus was small and firm; when it was opened a necrotizing endometritis was found. Microscopic examination revealed an organizing thrombosis of the parovarian veins.

The hemolytic streptococcus isolated repeatedly from blood and uterine cultures was identified as group B by the method of Lancefield. The micro-organism differed from group C in that the growth on rabbit blood agar was firmer in consistency and more opaque. Marked hemolysis was noted both aerobically and anaerobically on blood agar plates. A slide agglutination test with the patient's serum gave a 4 plus reaction.

On the basis of the clinical course of the patient the port of entry of the streptococcus was probably the uterus, although the necropsy showed little evidence for this pathogenesis of the bacterial endocarditis.

Bliss and her collaborators[3] have shown that sulfanilamide in broth in a dilution of 1:10,000 has a definite bacteriostatic effect on strains belonging to groups A, B and C but not D or E. The best results were obtained with A, although good results were obtained with B and C. They also noted that sulfanilamide is of value in the treatment of infections in animals caused by streptococcus of group C. Seastone[4]

1a. By Dr. Calvin B. Coulter, Director of Laboratory of Bacteriology, Kings County Hospital.

2. Lancefield, R. C.: Serological Differentiation of Human and Other Groups of Hemolytic Streptococci, J. Exper. Med. 57: 571 (April) 1933.

3. Bliss, Eleanor A.; Long, P. H., and Feinstone, W. H.: Differentiation of Streptococci and Its Relation to Sulfanilamide Therapy, South. M. J. 31: 303 (March) 1938.

4. Seastone, C. V.: Effect of Sulfanilamide on Group C Hemolytic Streptococcus Infections, J. Immunol. 33: 403 (Nov.) 1937.

noted the favorable effect of sulfanilamide therapy on guinea pigs infected with two strains of group C. Colebrook and Purdie,[5] however, observed that with one group C strain they could obtain only a slight protective effect in mice.

Since in both of the cases here reported sulfanilamide therapy was disappointing, experiments were undertaken to determine the effect of the drug on these particular strains of streptococci. Streptococcus cultures were grown in infusion broth for eight hours at 34 C. Serial dilutions in broth of 10^{-5}, 10^{-6} and 10^{-7} were made from these cultures and sulfanilamide was added until final concentrations of 1:10,000 were obtained. Similar tubes without sulfanilamide were prepared as controls. The two series of cultures were examined for presence and amount of growth after incubation at 37, 34 and 22 C. for fifteen hours. No difference could be detected in the rate of growth in the sulfanilamide tubes as compared with the controls, so that it was believed that little if any bacteriostasis occurred. Recently, however, White and Parker[6] have found that bactericidal action due to sulfanilamide cannot be demonstrated at a test temperature lower than 39 C. Evidence has been reported by Levaditi and Vaisman[7] that sulfanilamide exerts its effect on the streptococcus through its influence on the capsule of the micro-organisms. Experiments carried out in the Hoagland Laboratory of the Long Island College of Medicine[8] show that temperatures between 39 and 41 C. exert a profound influence on the development of the streptococcus capsule, and it is possible that a bacteriostatic effect might have been demonstrated if incubation had been carried out at higher temperatures than 37 C.

To test experimentally the chemotherapeutic effect of sulfanilamide on these strains of streptococci of groups B and C, white mice weighing from 18 to 20 Gm. were inoculated with cultures of the micro-organisms. Infusion broth cultures grown for fifteen hours at 37 C. were diluted from 10^{-1} to 10^{-7}. For each of the serial dilutions six mice were inoculated, each being given intraperitoneally 0.5 cc. of the culture dilution. Immediately after the peritoneal injections three mice in each series were given subcutaneously 8 mg. of sulfanilamide. This dose was given daily for three days and 1 mg. daily for the six following days. The remaining mice served as controls. The control mice of group B which received dilutions of 10^{-1} to 10^{-5} died within one to eight days, those receiving the dilutions of 10^{-6} died within fifteen to eighteen days, and those given the dilution 10^{-7} survived for thirty days. The mice which were given sulfanilamide and which received culture dilutions of from 10^{-1} to 10^{-6} died within one to nine days, while those receiving dilutions of 10^{-6} and 10^{-7} survived for thirty days. Since the mice to which sulfanilamide had been administered died almost as early as the control mice, with the exception of the series of the 10^{-6} dilution, in which the treated mice survived and the controls died after fifteen days, one would be led to believe that sulfanilamide exerted only a mild chemotherapeutic effect on experimental infections in mice with this strain of group B streptococcus.

In the case of the group C streptococcus the control mice receiving dilutions of from 10^{-1} to 10^{-5} survived from one to six days, while the treated mice died between one and seven days after inoculation. Mice given dilutions of 10^{-6} and 10^{-7} of broth in the control and treated series survived for more than thirty days. There was thus no significant difference between the mice receiving sulfanilamide and the untreated controls.

We observed, however, as did Long and Bliss,[9] that more phagocytosis occurred in the peritoneal exudate of the treated mice than in the controls. The infecting organism was recovered in a number of instances from the peritoneum and heart's blood of the control mice and from those which had received sulfanilamide.

COMMENT

The majority of human streptococcic infections are thought to be due to members of group A. Following Lancefield,[2] streptococci of group C have been regarded as pathogenic for animals rather than man. Among a number of strains of hemolytic streptococci from parturient women, Lancefield and Hare[10] found several of group C, but only one was from a patient with a febrile puerperium. Bliss and her associates[3] likewise have emphasized the lack of pathogenicity of group C for man. Evidence has been presented by others, however, that group C may be pathogenic for human beings. Hare,[11] Plummer[12] and Evans and Verder[13] have noted that it may cause erysipelas. Plummer found among forty-seven cases of puerperal infection due to streptococci forty-four of group A and two of group C.

Congdon[14] classified the streptococci from twelve cases of septic abortion. Eight were of group A, two of group B, one of group C and one of group D. The two fatal cases, however, belonged to group A. Evans and Verder found fourteen strains of group C streptococci among thirty-six strains isolated from cases of puerperal infection. All occurred, however, during 1931 and 1932 when a wave of group C puerperal infection occurred in London similar to the wave of erysipelas infection due to group C which was observed in Baltimore in 1935. Colebrook and Purdie have reported two cases of puerperal infection due to group C in a series of 100 cases. In both, however, the infection was limited to the uterus, vagina and perineum. Fatal puerperal infection caused by group C is reported here for the first time to our knowledge.

Fatalities due to group B infections have been noted by several authors. Two cases reported by Fry[15] showed vegetative endocarditis similar to that described here and caused by group B, but neither presented postmortem evidence of uterine infection. In our group B case it was not conclusively demonstrated that the infection had entered through the uterus, but this seems probable. However, the picture presented by these three

5. Colebrook, Leonard, and Purdie, A. W.: Treatment of 106 Cases of Puerperal Infection by Sulfanilamide, Lancet 2:1237 (Nov. 27) 1937.
6. White, H. J., and Parker, J. M.: Bactericidal Effect of Sulfanilamide upon Beta Hemolytic Streptococci in Vitro, J. Bact. 36:481 (Nov.) 1938.
7. Levaditi, C., and Vaisman, A.: Mécanisme de l'action curative et préventive du chlorhydrate de 4'sulfamido-2.4.diamino-azo-benzène et d'autres dérivés similaires dans l'infection streptococcique expérimentale Compt. rend. Soc. de biol. 120:1077, 1935.
8. Coulter, C. B., and Stone, Florence M., to be published.
9. Long, P. H., and Bliss, Eleanor A.: Para-Amino-Benzene-Sulfanilamide and Its Derivatives: Experimental and Clinical Observations on Their Use in the Treatment of Beta-Hemolytic Streptococcic Infection, J. A. M. A. 108:32 (Jan. 2) 1937.
10. Lancefield, R. C., and Hare, Ronald: Serological Differentiation of Pathogenic Strains of Hemolytic Streptococci from Parturient Women, J. Exper. Med. 61:335 (March) 1935.
11. Hare, Ronald: Classification of Hemolytic Streptococci from the Nose and Throat of Normal Human Beings by Means of Precipitin and Biochemical Tests, J. Path. & Bact. 41:499 (Nov.) 1935.
12. Plummer, Helen: Serological Study of Haemolytic Streptococci J. Bact. 30:5 (July) 1935.
13. Evans, A. C., and Verder, Elizabeth: Studies on Hemolytic Streptococci; Characteristics of Human and Animal Strains of Groups A and C, J. Bact. 36:133 (Aug.) 1938.
14. Congdon, P. M.: Streptococcal Infection in Childbirth and Septic Abortion: Source of Infection and Grouping of Hemolytic Strains, Lancet 2:1287 (Dec. 7) 1935.
15. Fry, R. M.: Fatal Infections by Hemolytic Streptococcus Group B, Lancet 1:199 (Jan. 22) 1938.

cases of vegetative endocarditis, with little local reaction to indicate the port of entry, may prove to be characteristic of infections by the streptococcus of group B.

SUMMARY AND CONCLUSIONS

1. Two cases of vegetative endocarditis due to the hemolytic streptococcus groups B and C were observed. One was postabortal and the other probably post partum.

2. Death due to infection in the human being by the hemolytic streptococcus group C is reported for the first time to our knowledge.

3. Massive sulfanilamide therapy failed in both cases. The retention of infected placental tissue may have been a contributory factor in one case.

4. In vitro and in vivo experiments to determine the effect of sulfanilamide on the particular strains of streptococci found in these two cases were carried out. The results indicated little or no chemotherapeutic effect.

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NEUROTIC SYMPTOMS AND CHANGES OF BLOOD PRESSURE AND PULSE

FOLLOWING THE INJECTION OF EPINEPHRINE

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Our purpose in this study was (1) to observe the effect of epinephrine on the blood pressure and pulse rate of psychoneurotic and normal persons and (2) to compare the sensations following the injection, as given in subjective reports, with the symptoms recorded in the patients' clinical records.

Goetsch,[1] in his study of the effect of epinephrine on patients with hyperthyroidism, found that these patients reacted actively to 0.5 mg. of epinephrine given subcutaneously, whereas normal persons showed no reaction to this dose. He further indicated that many conditions such as "queer nervous disturbances, psychasthenia, psychoneuroses, hysteria, neurasthenia, melancholia and arteriosclerosis" gave essentially negative results, although in a few of these cases some acceleration of pulse and a slight rise of blood pressure occurred, but no subjective symptoms; or a slight transient reaction was observed.

Goetsch described a positive reaction to epinephrine as an early rise of blood pressure and pulse rate of over 10 points at least. He observed that many times there was a considerable increase in pulse rate, without much increase in blood pressure but with an increase of "signs and symptoms."

Tompkins and her associates,[2] in reporting a study in which Goetsch's procedure was utilized, further elaborated the typical epinephrine response, stating that diastolic pressure may rise, fall or remain unaltered. Parallel with these changes they noted an increase in given characteristic signs and symptoms such as tremor, vasomotor reactions, palpitation and precordial pain. None of the normal persons they tested showed any of these reactions.

Our study was carried out on twenty-five psychoneurotic patients, fourteen men and eleven women, and on nineteen nurses and students, fourteen men and five women. The patients were all registered in the dispensary and came by appointment for the special observations.

Each subject was told to lie down on the examining table and relax and was informed that he was to be given an injection but was not told of what it consisted. The blood pressure and pulse rate were then recorded at frequent intervals, about one minute apart, until it was determined that a stable systolic blood pressure level had been reached.

The time interval before a fairly stable level was attained varied from subject to subject, the range being from three to twenty-seven minutes (average ten minutes) for patients and from three to eighteen minutes (average six minutes) for the normal subjects.

It was noted that numerous conditions caused rather wide fluctuations in blood pressure and pulse rate in some instances during the preliminary observation period. One patient's systolic pressure, for example, rose 26 points and the diastolic pressure 20 points when one of the investigators entered the room; another increase of 28 points in systolic pressure and 10 points in diastolic pressure occurred during an interval of five minutes when the patient cried and spoke of being ashamed to complain when she was not really sick. Again, when a syringe was brought into the room another patient's systolic pressure suddenly rose 16 points and the diastolic pressure dropped 10 points.

These unusual variations were seen about as frequently in the normal group as among the psychoneurotic patients. In one instance the systolic pressure rose 20 points and the diastolic pressure 12 points at a moment when the subject was laughing. In another instance the pulse rate rose 20 points, and in two subjects the diastolic pressure dropped 20 points without apparent cause. For the most part, however, fluctuations of blood pressure and pulse rate were small during the preliminary observation period, the patients averaging 3.4 points for systolic pressure, 4.1 for diastolic pressure and 0.5 for pulse rate. The corresponding values for the normal subjects were -0.9, $+0.8$ and $+0.6$.

When it was established that the blood pressure and pulse readings were fairly constant, 0.5 cc. of physiologic solution of sodium chloride was injected into the cubital vein for the purpose of control observations. Readings of blood pressure and pulse rate were taken as soon as the injection was completed and every half minute thereafter until it was apparent that these were stable. This time interval was in all cases less than ten minutes. The identical procedure was then repeated, except that the material injected was 0.01 mg. of epinephrine (0.5 cc. of a 1:50,000 solution in 0.9 per cent sodium chloride). Readings were again taken every half minute until a return to the initial level occurred, the maximum time interval being eight and one-half minutes for the normal subjects and ten minutes for patients.

After the observations following each injection had been completed, the subjects were asked to give a report of the feelings and sensations they experienced after the injection.

From the Psychiatric Institute (Dr. H. Douglas Singer, Director) of the Research and Educational Hospitals of the University of Illinois College of Medicine.

1. Goetsch, Emil: Newer Methods in the Diagnosis of Thyroid Disorders; Pathological and Clinical, New York State J. Med. **18**: 259-267 (July) 1918.

2. Tompkins, Edna H.; Sturgis, C. C., and Wearn, J. T.: Studies on Epinephrine: II. The Effects of Epinephrine on the Basal Metabolism in Soldiers with "Irritable Heart," in Hyperthyroidism and in Normal Men, Arch. Int. Med. **24**: 269 (Sept.) 1919.

Table 1 shows the blood pressure and pulse changes which followed the injection of epinephrine. The maximum change in systolic pressure of patients was considerably larger than of the normal subjects, 68 versus 40 mm. of mercury, and the range was almost twice as great. The average change was 24.3 mm. for patients and 18.5 mm. for the normal group, a difference of 5.8 mm. The coefficient of reliability of this difference, however, was not sufficiently large to indicate that the difference was statistically reliable. Likewise, the differences in diastolic blood pressure and pulse rate were not significant. A striking fact noted in connection with diastolic pressure was its tendency either to rise or to fall after the injection of epinephrine. Pulse rate, too, tended to decrease in some instances, but on the whole upward changes predominated.

TABLE 1.—*Changes in Blood Pressure and Pulse Following the Intravenous Injection of 0.01 Mg. of Epinephrine*

		No. of Cases*	Change: Minimum	Change: Maximum	Change: Mean	Standard Deviation	Probable Error: Mean	Probable Error: Difference	C. R.†
Systolic blood pressure	Patients	25	0	68	24.3	15.9	2.144	2.826	2.3
	Controls	19	4	40	18.5	9.8	1.518		
Diastolic blood pressure	Patients	25	±6	30	2.8	15.3	2.064	3.229	2.4
				−30					
	Controls	19	2	24					
				−30	−4.9	15.9	2.486		
Pulse	Patients	22	8	36	15.0	14.7	1.983	2.881	1.7
				−24					
	Controls	18	8	40					
				−14	10.9	13.8	2.091		

* Pulse records were not obtained in all cases.

† Coefficient of reliability = $\frac{\text{Difference}}{\text{Probable error of difference}}$. This value should equal 3 to be statistically reliable.

TABLE 2.—*Changes in Blood Pressure and Pulse Following the Intravenous Injection of 0.5 Cc. of Physiologic Solution of Sodium Chloride*

		No. of Cases*	Change: Minimum	Change: Maximum	Change: Mean	Standard Deviation	Probable Error: Mean	Probable Error: Difference	C. R.
Systolic blood pressure	Patients	18	0	26	5.2	8.5	1.349	1.685	0.4
				−10					
	Controls	18	0	16					
				−6	4.6	6.1	0.973		
Diastolic blood pressure	Patients	18	−2	18	5.6	7.4	1.187	1.727	2.1
				−4					
	Controls	18	0	14					
				−10	1.9	7.9	1.255		
Pulse	Patients	16	0	20	2.4	8.5	1.433	1.913	0.4
				−16					
	Controls	17	0	16					
				−12	1.7	7.5	1.259		

* The number of cases does not correspond to that in table 1 because not all subjects received salt solution.

Table 2 shows the changes in blood pressure and pulse rate following the injection of physiologic solution of sodium chloride. All three types of measure tended either to decrease or to increase, although the maximum increases in all instances were greater than the maximum decreases. Differences between the patients and the normal group were negligible and not statistically reliable.

Table 3 shows a comparison of blood pressure and pulse reactions to epinephrine and salt solution. The average change in blood pressure and pulse rate of both the normal and the psychoneurotic groups was strikingly lower after the injection of salt solution than of epinephrine, except for diastolic pressure. The average change in diastolic pressure was greater after salt solution owing to the fact that there were a great many more and larger decreases (negative values) in diastolic pressure after epinephrine, which tended to lower (make less positive) the average change. The coefficients of reliability were so small, however, that the differences in diastolic pressure following the injection of epinephrine and of salt solution cannot be regarded as significant.

In a review of the literature based on studies of subcutaneous injections of epinephrine, Grill[3] stated that variations in the epinephrine effect depend on the initial blood pressure and that when this is low one has to reckon with a relatively poor effect. He maintained that the best effect is obtained at the normal blood pressure level and that with increased pressures the effect again is poor. Our study does not confirm this idea.

TABLE 3.—*Comparison of Blood Pressure and Pulse Reactions to 0.5 Cc. of a Solution of Epinephrine (0.01 Mg.) and to 0.5 Cc. of Physiologic Solution of Sodium Chloride*

	Average Change: Salt	Average Change: Epinephrine	Difference	P. E. Difference	C. R.
Systolic blood pressure					
Patients	5.2	24.3	19.1	2.533	7.5
Controls	4.6	18.5	13.9	1.808	7.6
Diastolic blood pressure					
Patients	5.6	2.8	2.8	2.301	1.2
Controls	1.9	−4.9	6.8	2.798	2.4
Pulse					
Patients	2.4	15.0	12.6	2.446	5.1
Controls	1.7	10.9	18.2	2.441	7.4

According to table 4, the maximum rise of systolic blood pressure of psychoneurotic patients following the injection of epinephrine was least when the initial pressure was low and increased directly with an increase in the initial level. The opposite was true in the normal group, the rise of systolic pressure tending to be less as the initial pressure increased. This suggests that some psychoneurotic individuals may be sensitized to epinephrine, owing to its overproduction in the body under emotional conditions.

TABLE 4.—*Relation of Initial Systolic Blood Pressure to the Maximum Rise Following Intravenous Injection of 0.01 Mg. of Epinephrine*

Initial Blood Pressure	Patients: No. of Cases	Patients: Maximum Rise	Controls: No. of Cases	Controls: Maximum Rise
100-109	1	0	2	22
110-119	5	23	2	22
120-129	6	29	7	19
130-139	6	21	3	15
140-149	3	21	5	16
150-159	2	37	1	10
Total	25		19	

Table 5 shows the variety of symptoms expressed by the subjects after the administration of epinephrine. Palpitation, weakness and trembling were most commonly described by the patients and sensations of

3. Grill, C.: Observations on the Adrenalin Need in Man and the Effect on the Blood Pressure at Different Blood Pressure Heights, Acta med. Scandinav. 91: 628-647, 1937.

warmth by the normal group. The latter also frequently mentioned palpitation, weakness, trembling and breathing difficulties.

In only two instances were similar reactions described after the injection of salt solution. One patient stated that he felt his heart "pumping" and that he was a little excited but not afraid. Another commented on the fast beating of her heart. All other subjects stated that they felt no difference following the injection of salt solution.

It was striking that in thirteen of the twenty-five patients, or more than half, the symptoms following the administration of epinephrine corresponded at least in part to the presenting complaints. Remarks such as the following were made by these patients:

I feel just like this when I get a spell at home.
That's just the way I always feel.
I had this funny feeling in my stomach before.
I have these numb spells anyway.
I feel attacks like this when I go to bed at night.
When I make myself work I feel this way.
I have pain in the right leg like I usually have.
I feel taut on the right side, the same sort of thing as usual, but worse.
My heart flutters like when I feel weak. At those times my heart feels sort of fluttery.
My feelings were on the same order as my first attack.
I have these funny sensations often when I feel weak in the legs and shaky all over.
Perspiring is an ordinary symptom of mine.
I feel weak and trembly, like crying. Ordinarily when I get tired my hands are shaky and I cry.

The close correspondence between the sensations the patients described after injection of epinephrine and their usual psychoneurotic symptoms may be further evidence that the complaints of some psychoneurotic patients are due to the overproduction of epinephrine.

COMMENT

Many "neurotic" symptoms are obviously not purely imagined. The increase in heart rate, perspiration of the palms and spasm of the intestinal musculature are all physiologic reactions, although their etiology may be psychologic. From our observations it appears that epinephrine may be one of the mediating agents of these reactions. Our subjects had no fear of the injection, as evidenced by the small reactions to physiologic solution of sodium chloride and by the lack of subjective complaints following the injection of salt solution. Epinephrine was given "simply as a repetition" of the first injection, and yet the signs and symptoms following it were quite definite.

A coterie of signs and symptoms was common to most subjects, normal or psychoneurotic. These included deep sighs, pallor, palpitation, weakness and trembling. It was interesting to note that the frequency of symptoms produced by epinephrine was roughly the same in normal subjects and psychoneurotic patients, which may be further evidence that most of the symptoms described were not psychic and imagined but were produced by epinephrine.

Another observation was that existing "psychoneurotic" symptoms were markedly aggravated by epinephrine. Many patients a few moments after the injection of epinephrine spoke of "feeling just like this" during a "nervous" attack. The complaints of some patients were general, consisting mainly of weakness and trembling. Others described sensations localized in the stomach, heart, legs and other parts of the body. One patient who complained of "sciatic pain" which was not present after the injection of salt solution felt the pain acutely for several minutes after epinephrine was injected. This suggests that there may be a locus which when stimulated gives rise to local symptoms. The question arises whether pain and other symptoms of organic origin may not be aggravated by epinephrine. This possibility is now being investigated.

Normally the secretion of epinephrine is sufficient to maintain blood pressure, normal glycogenolysis and other functions, the amount secreted varying with the person and the situation. Because of the relation of the adrenal glands to the autonomic nervous system, the amount of flow presumably is proportionate in some degree to the activity of this part of the nervous system. States of excitement and fear may produce stimulation of the autonomic system, and as the psychoneuroses are associated with obvious or repressed emotional conflict they are likely to produce such stimulation.

No doubt the patient feels his symptoms keenly, and he refuses to believe they are imaginary. He can be persuaded, however, to realize that while his symptoms are real and due to autonomic stimulation they are a part of his emotional reaction.

TABLE 5.—*Frequency of Expressed Symptoms Following Intravenous Injection of 0.01 Mg. of Epinephrine*

Symptoms	Patients		Controls	
	No.	%	No.	%
Palpitation (flutter, pounding)	10	9.3	11	12.5
Weakness	10	9.3	9	10.2
Trembling	10	9.3	9	10.2
Breathing difficulties	9	8.4	9	10.2
Warmth (flushing, perspiration)	8	7.5	13	14.8
Fear (death)	7	6.5	5	5.7
Dizziness (floating)	7	6.5	3	3.4
Numbness (tingling)	6	5.6	0	0.0
Throat: choking, numbness, tightness, dryness	6	5.6	6	6.8
Legs: weak, shaky, light, numb, tense, heavy	5	4.7	2	2.3
Head: throbbing, pressure, ache, light, congested	5	4.7	0	0.0
Excited, tense	5	4.7	3	3.4
"Funny" sensations in abdomen or arm	4	3.7	2	2.3
Visual phenomena	3	2.8	1	1.1
Pain: leg, head, face	2	1.9	3	3.4
Pulsations: abdomen, leg, throat, body	2	1.9	2	2.3
Fingers cold	1	1.0	1	1.1
Pressure on knees	1	1.0	1	1.1
Miscellaneous	6	5.6	2	2.3
Total	107	100.0	89	99.9

SUMMARY

1. The systolic blood pressure and pulse reactions of both psychoneurotic and normal persons are significantly greater following the intravenous injection of epinephrine than of salt solution. A similar difference in diastolic blood pressure was not observed.

2. The differences in blood pressure and pulse reactions between normal and psychoneurotic persons following intravenous injection of epinephrine are not statistically reliable.

3. The diastolic blood pressure tends to fall as often as it rises after the intravenous injection of epinephrine.

4. Epinephrine administered intravenously in dosage sufficient to produce changes in blood pressure and pulse rate produces similar signs and symptoms in normal and in psychoneurotic persons. These symptoms are similar to those commonly described by psychoneurotic patients.

5. Epinephrine aggravates existing psychoneurotic symptoms and may activate given latent symptoms.

6. From the therapeutic point of view, a patient will accept the fact that his symptoms are organic and not imaginary, although their basis may be psychologic.

30 North Michigan Avenue.

PROGNOSIS IN SCHIZOPHRENIA

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Schizophrenia is a major medical and economic problem. Twenty-one years ago Pollock said:

> If some unknown disease should strike down and kill 1,000 young people in New York City during the current year, do you think the medical profession, the newspapers, and the public generally would view the matter with complacency? Yet dementia praecox will come into this city as a masked enemy and steal away the minds of 1,000 young men and women and condemn them to a living death this year . . . and scarcely no public mention of the matter will be made.

A true rebirth phenomenon has insidiously manifested itself during the past half decade. It has been given impetus by the report of Meduna on the convulsive treatment of schizophrenia through the use of pentamethylenetetrazol (metrazol, cardiazol). The results achieved by Sakel using insulin as a method of inducing pharmacologic shock received wide publicity.

The great attention focused by these forceful attacks on a recalcitrant syndrome has been of inestimable value in an unforeseen direction, for regardless of the validity

TABLE 1.—*First Admissions (339)*

	Type									
	Simple		Hebephrenic		Catatonic		Paranoid		Total	
Sex	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
Total number of cases	17	4	44	49	31	39	101	62	193	146
Percentage paroled and discharged	65	75	32	33	55	65	44	36	45	43
Combined percentage paroled and discharged, both sexes	67		32		59		41		44	

and worth of the pharmacologic shock as therapy that technic has attracted long needed allies to the side of psychiatry in its struggles to elucidate the nature of schizophrenia. The biochemist, the physiologist and the pharmacologist, long protesting against the esoteric and impalpable material of psychology, allowed themselves a taste and now want a bite.

Psychiatry is not fixed. Its tenets shift gradually, and its criteria change with time. Standards used two decades ago are now discarded. To measure anything one must have a standard of comparison. The worth of the pharmacologic shock treatment in schizophrenia can be adjudged only with a greatly increased number of cases, accompanied by adequate controls, observed over a long period of time.

With this goal in mind I undertook to study all the cases of schizophrenia admitted during one fiscal year to the Rockland State Hospital for two reasons: first, because of the need for controls for comparative purposes in the pharmacologic shock group and, secondly, because I wished to evaluate the work done at this hospital. The hospital receives patients committed from New York City (boroughs of Manhattan, Bronx and Richmond) and the county of Rockland.

The year 1935 was picked for these reasons: (1) There was a change in the New York State Department of Mental Hygiene Statistical Guide with the introduction of a new classification approved by the American Psychiatric Association in 1934, which partially invalidated the old New York State statistics for the comparative purposes necessary; (2) this year antedates the introduction of the shock treatment at Rockland; (3) it offers a good statistical sampling, for there are more than 500 cases, and (4) all the diagnoses at Rockland during that year were made by one man.

From the Rockland State Hospital, Orangeburg, N. Y.
Read in part before the Interhospital Conference of the New York State Hospitals at the Psychiatric Institute and Hospital, New York, April 8, 1938.

RESULTS

In a total of 536 cases admitted during the year there were twenty deaths due to extraneous causes and twenty-five transfers into and out of the hospital. Of

TABLE 2.—*Readmissions (152)*

	Type									
	Simple		Hebephrenic		Catatonic		Paranoid		Total	
Sex	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
Total number of cases	5	4	23	20	15	23	31	32	74	79
Percentage paroled and discharged	80	50	22	35	33	27	32	34	43	33
Combined percentage paroled and discharged, both sexes	67		29		30		43		37	

the remaining 491, 339 were first admissions and 152 were readmissions; the latter had been admitted to hospitals other than Rockland or had previously been admitted to this hospital. The patients are grouped by type and sex as follows: simple type, twenty-three males and eight females; hebephrenic type, seventy-one males and sixty-seven females; catatonic type, fifty-three males and sixty-six females, and paranoid type, 144 males and 103 females. In addition, there was one female with a mixed type of the disease.

Thus there is a slight preponderance of males over females except in the catatonic type. In all there were 291 males against 245 females. The most frequent type encountered is the paranoid, followed in order by the hebephrenic, catatonic and simple types.

The syndrome strikes youth. The average age on admission for thirty-one patients with simple schizophrenia was 26.8 years; for 138 with the hebephrenic, 25.6 years; for 119 with the catatonic type, 25.9, and for 247 with the paranoid, 33.5 years. Thus the oldest group is the paranoid and the youngest the hebephrenic.

TABLE 3.—*First Admissions and Readmissions (491)*

	Type									
	Simple		Hebephrenic		Catatonic		Paranoid		Total	
Sex	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
Total number of cases	22	8	67	69	46	61	132	94	267	224
Percentage paroled and discharged	68	63	28	33	48	49	46	35	43	39
Combined percentage paroled and discharged, both sexes	67		31		49		41		42	

The length of time the patients were noticeably psychopathic is of interest. It is found that those with the paranoid type are able to adjust themselves in the outside world the longest. The patient with the catatonic type is hospitalized soonest after onset, followed by the hebephrenic and simple types. The duration of illness in days before hospitalization for first admissions alone is 694 for the simple type and 593 for the hebephrenic, 519 for the catatonic and 712 for the paranoid type. Readmission for the catatonic type occurs very soon after exacerbation of the illness.

A study of the average length of hospital stay from admission to parole in cases in which remission occurs

shows that the longest hospitalization results from catatonia and the shortest from simple schizophrenia. The average hospitalization in days of paroled patients is simple type 212, hebephrenic type 270, catatonic type 329 and paranoid type 225.

The tables show the number and percentage distribution of the paroled and discharged patients in the various types for first admissions alone, readmissions alone and for the two groups together. One is struck in table 1 by the very high parole rate among first admissions, for an average for all types and for both sexes of 44 per cent is paroled. Noteworthy is the astonishing percentage of paroles and discharges in the catatonic groups, with 65 per cent and 55 per cent of females and males respectively improving sufficiently to go home, and this without special treatment. The simple type also shows a high rate, but the number of cases is less. The hebephrenic rate fits in with the conception of the more serious and refractory nature of this reaction type, for this group has the lowest parole rate, while the paranoid type is next. Table 2 shows that the parole rate for readmitted cases of the catatonic type has dropped and is next to the lowest, closely approximating the hebephrenic type, which maintains its negative leadership. The simple type remains highest and the paranoid type is in about the same position as for first admissions. Table 3 combines the preceding two tables: the simple and catatonic types offer the best prognosis, closely followed by the paranoid type, the hebephrenic type being left far behind, in accordance with preexisting concepts.

The question of how many persons have previously been patients and have been paroled or discharged before may be brought up. It is found that of both sexes 28 per cent of all those discharged and paroled had previously been admitted for this condition; the remainder had been hospitalized for the first time.

SUMMARY

1. The most frequent reaction type encountered in this study is the paranoid, followed in order by the hebephrenic, catatonic and simple types.

2. The oldest group is the paranoid, the youngest the hebephrenic type.

3. The catatonic type is hospitalized most quickly after onset; then follow the hebephrenic and simple types; the patients of the paranoid type are able to adjust the longest with their psychoses.

4. In cases of readmission, the longest hospital stay results from catatonia, the shortest from simple schizophrenia.

5. Among first admission only, 67 per cent of the simple type, 59 per cent of the catatonic, 41 per cent of the paranoid and 32 per cent of the hebephrenic type are paroled. This is an average of 44 per cent for all types.

6. Among readmissions only, 67 per cent of the simple type, 43 per cent of the paranoid, 30 per cent of the catatonic and 28 per cent of the hebephrenic type are paroled, an average of 37 per cent.

7. The prognosis for second attacks is poorer.

8. The prognosis in simple schizophrenia is best; the catatonic type has a relatively good outlook for the first attack and a poor one for subsequent episodes, approaching the uniformly poor prognosis held out for the hebephrenic type. Patients with paranoid schizophrenia have a fair outlook, unchanged by previous hospitalization. These patients do not deteriorate so rapidly as the catatonic and hebephrenic types, and so their parole rate is constant.

9. The best ultimate prognosis is held by the simple and catatonic types, followed by the paranoid and lastly by the hebephrenic type.

10. Of all those paroled or discharged, 72 per cent had only one admission and 28 per cent were paroled more than once.

CONCLUSIONS

The prognosis in schizophrenia is not so hopeless as is generally believed. Among patients on their first admission in this study, 44 per cent remitted spontaneously and were able to return to their homes.

Although the results reported with pharmacologic shock treatment are, so far, decidedly favorable, especially as far as it seems to cut down the length of hospital stay before remission in early cases, psychologic implications must not be overlooked. A deep regression occurs during stupor or convulsion out of which a new environmental adaptation follows. The intensified relation of patient to physician and added nursing care may be the factors which promote rapid remission.

It must not be forgotten, as the previous figures show, that spontaneous remission is as frequent or almost as frequent as pharmacologically induced remission.

171 Washington Street.

GASTRIC PERISTALSIS AFTER PYLOROTOMY IN INFANTS

WITH SPECIAL REFERENCE TO POSTOPERATIVE CARE OF PYLORIC STENOSIS

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For nearly a quarter of a century it has been customary in postoperative management of infants who have undergone the Fredet-Rammstedt operation of pylorotomy for hypertrophic pyloric stenosis to begin the administration of water and milk very soon after operation and to repeat it at frequent intervals. Morgan,[1] the first to outline the treatment in detail, advised giving 16 cc. of water one hour after operation, following it with 16 cc. of slightly diluted breast milk an hour later and thereafter alternating water and milk in gradually increasing amounts about every one and one-half hours. Strachauer [2] begins feeding from three to four hours after operation. Paterson [3] begins at four hours, giving 4 cc. hourly and gradually increasing the amount. Page [4] begins an hour or two after operation. Lanman and Mahoney [5] begin at two hours with water and repeat at two hour intervals, later using whey and breast milk. Norris,[6] however, gives nothing by mouth for six hours but then gives 15 cc. of breast milk every thirty minutes for four hours. Cobb [7] gives water immediately after recovery. Thompson and Gaisford [8]

From the Department of Pediatrics, Stanford University School of Medicine.

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give 8 cc. of water two hours after operation and alternate formula and water thereafter at two hour intervals. Donovan [9] starts water at two hours, gives 8 cc. of milk at four hours and follows with milk at three hour intervals thereafter. Harris,[10] like Norris, gives nothing by mouth for the first six hours and then gives 4 cc. of breast milk every hour. Rowe [11] starts water two hours after operation and repeats it every fifteen minutes; he starts milk at eight hours and repeats it at three hour intervals. Holt and Howland [12] advise starting with from 5 to 10 cc. of breast milk as soon as the infant recovers from the anesthetic, repeating it every three hours and giving water between feedings.

Griffith and Mitchell [13] start water or sugar solution "a few hours" after operation and milk at six or eight hours. Parmelee [14] starts with 8 cc. of Ringer's solution and dextrose as soon as the infant is awake and repeats every two hours; an hour after the first solution, 15 cc. of breast milk is given and also repeated every two hours; thus the infant receives solution or milk every hour. Wyatt [15] gives 15 cc. of water two hours after operation and 15 cc. of milk two hours later; the alternation is continued during the first day. The total amount of fluid plus milk (usually breast milk) for the first twenty-four hours has been estimated by us to range from 4 ounces (120 cc.) to 16 ounces (480 cc.) and the time of first administration from about half an hour to six hours after operation. The intervals between feedings of water or breast milk range from fifteen minutes to two hours. These intervals, it should be noted, are much shorter than those ordinarily used in the feeding of babies.

It is evident that practically all writers on the subject believe that much earlier oral administration of fluid and food is required after pylorotomy than after laparotomy for other diseases and that the usual conservative rule of giving water very sparingly immediately after operation and no food for the first twenty-four hours must be disregarded. The conservative practice is based on a desire to minimize postoperative vomiting and on recognition of the fact that after operations on the abdominal organs normal peristalsis is often temporarily suspended, so that, even when not vomited, ingested material in the stomach will not be passed on into the intestine and absorbed. That postoperative vomiting after pylorotomy is frequent and often troublesome was noted by Morgan and other writers and has certainly been our own experience when following the usual schedule of early and frequent feedings. We were led by this observation to wonder whether the condition of temporary inhibition of peristalsis might not occur after pylorotomy as well as after other abdominal operations and, if so, whether the classic method of postoperative management of pylorotomy is altogether wise.

Postoperative Rates of Gastric Emptying *

Case No.	Barium Sulfate Given, Hours	Complete Retention Last Noted, Hours	Emptying First Noted, Hours	50-80% Retention, Hours	10-40% Retention, Hours	Practically Complete Emptying First Noted, Hours	Comment
1	2	7	10 (90%)	24 (50%)	..	..	Not examined after 24 hours
2	Before operation	24	..	..	..	25	Amount of barium sulfate small
3	2	3	5	7 (67%)	13 (±10%)	28	A few drops still in stomach at 22½ hours
4	±1	10	..	..	..	20	One drop still in stomach at 20 hours
5	5	8	14	..	24 (33%)	26½	A trace still in stomach at 26½ hours
6	4½	5	..	..	17 (40%)	22	No examination between 5 and 17 hours
7	5	11½	18 (90%)	25½ (50%)	..	29½	Small amount still in stomach at 29½ hours
8	2	8	18 (60%)	..	24 (30%)	48	No examination between 24 and 48 hours
9	2	3	4 (90%)	..	16 (60%)	22	
10	2	6½	9½	19 (80%)	..	24	

* The stated hours are dated from the time of operation. The percentages indicate the amount of retention as estimated by the roentgenologist.

For these reasons we have determined the rate and extent of gastric emptying during the period immediately following operation in ten cases. The operation in all instances was the standard Fredet-Rammstedt. From one to five hours after the infant returned from the operating room a teaspoonful of barium sulfate, suspended in an ounce of water, was given by mouth. Periodic examination at convenient intervals were made by fluoroscopy and roentgenograms for from twenty-four to forty-eight hours until the stomach was empty or practically so. Nothing else was given by mouth in most of the cases until that point had been reached, the fluid needs being met by hypodermoclysis. The accompanying table gives the results of the inquiry.

Omitting case 2, in which barium sulfate was not fed after operation, it will be observed that complete retention lasted from three to eleven and one-half hours (average, nine cases, 8.9 hours), that emptying was first noted from five to eighteen hours after operation (average, seven cases, 11.2 hours), and that emptying was not complete until from twenty to twenty-nine and one-half hours after operation (average, nine cases, counting the emptying time in cases 1 and 8 as twenty-five hours, 24.5 hours). Attention is called especially to cases 1, 5 and 8, in which from 30 to 50 per cent of the ingested barium sulfate remained in the stomach twenty-four hours after operation.

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10. Harris, Charles: Congenital Hypertrophic Pyloric Stenosis, St. Bartholomew's Hosp. Rep. **70**: 43, 1937.
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Protocols of the individual cases are given at the end of the paper.

COMMENT

It is clear that after pylorotomy for infantile pyloric stenosis gastric peristalsis is completely inhibited for several hours and is much depressed for twenty-four hours or more. Case 5 is of special interest in showing how long it may require to return to normal. This is the only case in which we had subsequent barium sulfate tests after the first day; these showed that on the third postoperative day emptying was still slow while on the twentieth day it was quite normal.

The peristaltic depression after operation is, we believe, closely related to postoperative vomiting and distention and, having demonstrated it, we believe that the schedule of early postoperative feeding now in general use should be revised. It may well cause or increase vomiting or lead to unfortunate degrees of distention in stomachs already dilated by the preexisting obstruction. Certainly much of the ingested fluid and food is not useful to the patient, being either vomited or retained in the stomach, from which it cannot be absorbed.

For these reasons we have adopted the policy of withholding both water and food for about twenty-four hours after operation and of administering fluid parenterally during that time and usually also on the next day. On the second day we offer an ounce (30 cc.) of breast milk or formula every four hours, and on successive days we rapidly increase the amount up to the normal for size and need. With formula-fed babies we often employ thick cereal feedings at first, diluting them after a day or two or changing to ordinary fluid formulas. Under this plan of management vomiting, although not entirely eliminated, has been considerably lessened, and no serious postoperative difficulties have been encountered.

It may be pointed out that today infants with pyloric stenosis rarely come to the pediatrician and surgeon in the state of extreme malnutrition and dehydration which was so common a few years ago and which made the administration of food and fluid by mouth at the earliest possible moment seem exceptionally urgent. This was probably the basis for what now seems to us an undue haste in postoperative feeding. It appears not unreasonable that in the future the same general policy of postoperative feeding should be used after pylorotomy for pyloric stenosis as after laparotomy for other diseases.

CONCLUSIONS

1. After pylorotomy for hypertrophic pyloric stenosis there is a profound and prolonged depression of gastric peristalsis, which regularly lasts for about twenty-four hours and may last three or more days. In the average case evacuation of material ingested soon after operation does not begin for over eight hours and is not complete until twenty-four hours after operation. In our opinion this depression of peristalsis is closely related to postoperative vomiting, which is common and often persistent for several days after the Fredet-Rammstedt operation.

2. For these reasons the traditional early and frequent administration of water and food during the first postoperative day does not seem either logical or desirable, nor is the reason apparent why it should be considered urgent. It is suggested that the same general plan of postoperative management should be applied to pylorotomy as to other abdominal operations, food being withheld for about a day and water given very sparingly at first.

PROTOCOLS

The preoperative symptoms and signs were typical in all cases, and the diagnosis of hypertrophic pyloric stenosis was confirmed at operation.

CASE 1.—A boy aged 4 weeks was given barium sulfate mixture two hours after operation. Examinations three, five and seven hours after operation showed that no barium sulfate had left the stomach. At ten hours not over 10 per cent was out. At twenty-two hours the stomach was almost half empty. At twenty-four hours there was still 50 per cent retention; this was the last examination. Administration of water by mouth was begun at twenty-six hours and of formula at thirty-three hours. There was no postoperative vomiting.

CASE 2.—A boy aged 3 months had been given barium sulfate a few hours before operation, and no additional barium sulfate was given afterward. Examinations at frequent intervals after operation showed no peristaltic activity of the stomach for twenty-two hours. At twenty-four hours he was given 1 ounce (30 cc.) of thick formula. At twenty-five hours most of the barium sulfate had left the stomach and a peristaltic wave was seen for the first time.

CASE 3.—A girl 1 month old was given barium sulfate two hours after operation. Three hours after operation no peristalsis and no emptying were seen. At five hours a few drops had left the stomach. At seven hours the stomach was one-third empty; at thirteen hours the stomach was almost empty, and at twenty-three and a half hours only a few drops remained in the stomach near the pylorus. None at all remained at twenty-six hours. Feeding of thick cereal formula was begun at twenty-four hours, and the food was retained.

CASE 4.—A boy aged 1 month was given barium sulfate five hours after operation. Emptying had not occurred six and a half and eight hours after operation. It was first seen at fourteen hours, and at twenty-four hours the stomach was two-thirds empty. At twenty-six and a half hours a trace was still present. At this time liquid formula was given but was vomited. Thick cereal formula was retained.

CASE 4.—A boy aged 1 month was given barium sulfate shortly after operation. None had passed out of the stomach at two, six and ten hours. At twenty hours only a drop remained. Thick cereal feeding was started twenty-six hours after operation, and the food was retained.

CASE 5.—A boy aged 3 weeks was given barium sulfate five hours after operation. No emptying had occurred six and a half and eight hours after operation. Evacuation had begun at fourteen hours, and the stomach was only two-thirds empty at twenty-four hours. At twenty-six and a half hours a trace remained in the stomach. Fluid formula given at this time was vomited. Thick cereal (1 ounce) was given and retained. A second barium sulfate test was made two days later. One fourth of the amount ingested had left the stomach at two hours and 50 per cent at four and a half hours, and the stomach was then emptying rapidly. Twenty days after operation a third test showed normal peristalsis; 50 per cent of the barium sulfate had emptied at one hour and none was left in the stomach at four hours.

CASE 6.—A boy aged 7 weeks was given barium sulfate four and a half hours after operation. There was no emptying half an hour later. At seventeen hours 40 per cent of the barium sulfate still remained in the stomach. At twenty-three hours emptying was complete. Formula given at twenty-eight hours was retained.

CASE 7.—A boy aged 1 month was given barium sulfate five hours after operation; none had left the stomach half an hour or eleven and a half hours after operation. At eighteen hours there was still almost 90 per cent retention and at twenty-six and a half hours 50 per cent. At twenty-nine and a half hours a small amount of barium sulfate still remained in the stomach. Formula was started at twenty-six hours, and for the first few feedings small amounts were vomited.

CASE 8.—A boy aged 1 month was given barium sulfate two hours after operation. None had left the stomach eight hours after operation. At eighteen hours 60 per cent still remained

in the stomach and at twenty-four hours 30 per cent. At forty-eight hours, the time of the next examination, the stomach was empty. Feeding was begun at forty-eight hours. Some vomiting occurred.

Case 9.—A girl aged 3 weeks was given barium sulfate two hours after operation. Three hours after operation none had left the stomach and four hours after only 5 per cent. At sixteen hours 40 per cent remained in the stomach. At twenty-two hours emptying was complete. Fluid formula given at twenty-four hours was vomited, but thick cereal was retained.

Case 10.—A boy aged 6 weeks was given barium sulfate two hours after operation. Emptying had not occurred three and a half and six and a half hours after operation and was first noted at nine and a half hours. At nineteen hours 80 per cent was still in the stomach. At twenty-four hours the stomach was empty.

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STUDIES ON PRESERVED HUMAN BLOOD

I. VARIOUS FACTORS INFLUENCING HEMOLYSIS

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The current interest in the use of preserved human blood for transfusions has been especially motivated by economic pressure in the United States and by military necessity in Europe. Hence the empirical clinical use of transfusions of preserved blood has tended to precede rather than to follow fundamental objective biologic and chemical studies in the laboratory.

A review of the literature reveals few data from which the clinician can establish satisfactory criteria for the use or rejection of preserved blood. Two factors appear to have contributed to this paucity of laboratory observations: first, the practice of blood transfusion has been so extensive and the indications have been so diverse that it is often difficult for the clinician to define precisely which elements of the transfused blood he most desires his patient to receive; second, the exact mechanism of the production of the various reactions from blood transfusions is not well understood. Consequently evaluation of the relative merits of fresh and preserved blood has been inordinately delayed.

There is considerable evidence that the intravenous injection of a large amount of hemolyzed blood may result in death, but the exact relation of hemoglobin to the production of severe transfusion reactions has not been determined. There is an apparent correlation between the occurrence of hemolysis in vivo and the incidence of severe renal damage, but whether the lesions of the kidneys are the result of the action of free hemoglobin itself or are caused by some other factor released by disintegration of the erythrocytes has not been conclusively determined. For a detailed statement of this aspect of the problem, the reader is referred elsewhere.[1] It is proposed until further studies are made that preserved blood be considered unfit for transfusion if the hemoglobin content of the plasma is such that hemoglobinuria appears after the blood has been transfused.

In blood preserved by any technic the most obvious change occurs in the supernatant plasma, which sooner or later assumes the color of hemoglobin. It is not yet definitely established whether the erythrocyte must first rupture to give off its hemoglobin or whether it is possible for the pigment to diffuse out through small apertures in the cell membrane. Whatever the mechanism involved, the amount of free hemoglobin in the plasma of preserved blood may serve as a simple index of its suitability for use in transfusions and has consequently been used extensively for this purpose. Lichty, Havill and Whipple[2] have shown that there is a renal threshold for hemoglobin in the dog; more recently Ottenberg and Fox[3] demonstrated a similar mechanism in human beings.

Rous and Turner[4] in 1916 published the basic studies on the preservation of blood cells. They demonstrated that in general the rapidity of hemolysis is increased by the addition of electrolytes to the blood preservative mixture. On the contrary, when the serum was diluted with saccharose or dextrose the rate of hemolysis was much diminished. They devised a mixture consisting of three volumes of blood, two volumes of 3.8 per cent sodium citrate ($Na_3C_6H_5O_7 + 5\frac{1}{2}H_2O$) in water and five volumes of 5.4 per cent dextrose which kept human red cells intact for four weeks. It was used to some extent in the British Medical Corps during the World War.[5] In addition to the large volume this mixture had the disadvantage that the concentration of sodium citrate was too high for safe intravenous administration. Consequently the supernatant plasma was discarded and the cells were resuspended in saline or Locke's solution before being transfused.

In 1926 Perry[6] reported extensive observations on the storage of blood with a dextrose-lithium citrate mixture which served as an excellent preservative. As with the Rous-Turner mixture, it was necessary to discard some of the plasma because of the high concentration of citrate. The use of lithium citrate merits further investigation. The workers at the Moscow Institute of Hematology later devised a mixture which has been widely used and which consists of sodium chloride 7.0 Gm., sodium citrate 5.0 Gm., potassium chloride 0.2 Gm. and magnesium sulfate 0.004 Gm. in 1,000 cc. of water. To this is added an equal volume of blood. Lindenbaum and Stroikova,[7] at the Leningrad Research Institute for Blood Transfusion, compared this mixture with citrated blood and with the Rous-Turner mixture and concluded that the Moscow mixture inhibited hemolysis no better than did sodium citrate and not nearly as well as did the Rous-Turner mixture.

Gnoinski,[8] of Warsaw, recently reported the successful preservation of blood in ampules from which the

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5. Robertson, O. H.: Transfusion with Preserved Red Blood Cells, Brit. M. J. 2:691-695 (June 22) 1918.

6. Perry, M. C.: Preservation of Blood for Transfusion, Wisconsin M. J. 25:123-127 (March) 1926.

7. Lindenbaum, J., and Stroikova, X.: Laboratoriumsuntersuchungen über die Entstehungsbedingungen der Hämolyse im konservierten Blut, Deutsche Ztschr. f. Chir. 243:727-735 (Oct. 19) 1934.

8. Gnoinski, H.: Les modifications du sang conservé pendant plusieurs semaines et son effet thérapeutique, Sang 12:820-831, 1938.

air was excluded. He stated that the blood was "good" for ninety days. Scrutiny of the case histories of his six human recipients, however, reveals the fact that after transfusion two patients had fever and hemoglobinuria, three others had fever and only one had no transfusion reaction, and she received but 30 cc. of blood.

In reviewing all the experimental studies, one is impressed by the lack of quantitative data on hemolysis which makes exact comparison impossible. Although Rous and Turner pointed out that the presence or absence of hemolysis in sedimented blood could be determined only by examining the plasma after the cells had been resuspended and centrifuged out, many of the workers have not taken into account this slow diffusion of hemoglobin from the cell layer into the plasma. Practically all observers of hemolysis have used a grading system of 1 to 4 plus or no grading system at all. The only exception to this statement was found in the work of Scudder, Drew, Corcoran and Bull,[9] and there the hemoglobin estimations were published incidentally to studies of plasma potassium. Statements are frequently made that blood can be preserved for a given length of time, although no acceptable quantitative data are presented to indicate the amount of actual hemolysis. Other than direct estimations of the amount of hemoglobin in the supernatant plasma are obviously valueless.

The object of the studies here reported was to determine the rates of hemolysis occurring in human blood in various preservatives and stored under a variety of conditions.

GENERAL METHODS

In the majority of the experiments the general procedure was the same. Erlenmeyer flasks of pyrex glass of from 1,000 to 1,500 cc. capacity were autoclaved with appropriate amounts of the preservative to be studied. When dextrose solutions were to be combined with other chemicals, the former were heated separately to avoid caramelization and later combined with the latter aseptically. Blood was drawn into the flasks from the median basilic veins of healthy men in quantities of from 400 to 600 cc. The blood was mixed with the preservative by gentle rotation of the receiving flasks. A 16 gage needle was used and connected to the flask by a 15 inch section of gum rubber tubing. Before the cells settled, the entire mixture was apportioned in 50 cc. quantities into 250 cc. Erlenmeyer flasks closed with cotton plugs. The entire lot was stored under identical conditions, and when an analysis was to be made the entire contents of one small flask were thoroughly shaken and the cells were centrifuged out. The supernatant plasma was then pipetted off and analyzed for hemoglobin. This procedure insured a uniform dilution of blood and preservative throughout the entire experiment and obviated the difficulties attendant on sampling the same flask repeatedly.

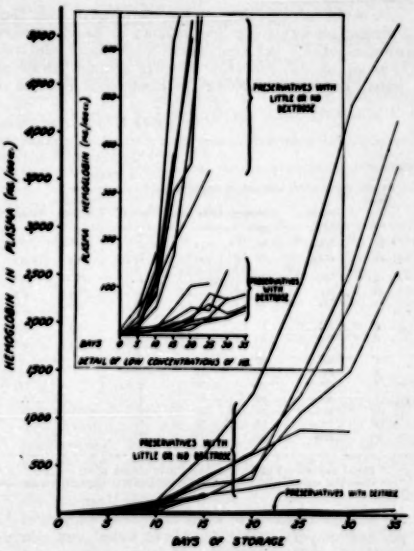
The refrigerator used was a room cooled by open coils of salt brine. The temperature was maintained at from 3 to 5 C. by an electrically controlled thermostat. Continuous records of the temperature were kept. The frost on the open refrigeration coils insured a high relative humidity and thus a minimum of evaporation.

Special precautions were taken to keep the blood away from sunlight or from prolonged exposure to artificial light.

In designing all preservatives an attempt was made to use isotonic solutions as determined by their depressions of freezing point. The freezing point of blood serum was taken as —0.56 C.

The following solutions were used in preservatives: 5.4 per cent anhydrous dextrose U. S. P. (Merck & Co., Inc.) in distilled water, 5.4 per cent anhydrous dextrose (Eastman Kodak Company) in distilled water, 3.2 per cent sodium citrate (Merck reagent grade, $Na_3C_6H_5O_7 + 2H_2O$) in distilled water, 0.95 per cent sodium chloride U. S. P. in distilled water and heparin (Connaught Laboratories) in distilled water (sterilized by Berkefeld filtration).

Several methods of estimation of small amounts of hemoglobin were tried before final adoption of the method of Wu.[10] This is a quantitative application of



Plasma hemoglobin values in blood mixtures stored in cotton-plugged flasks at 5 C. The values have been recalculated for differences in dilution when necessary to make them all comparable. The inset magnifies the details of the lower values by increasing the scale of the ordinates.

the benzidine test for hemoglobin in which a brown compound is compared in the colorimeter with a similar color developed in a standard hemoglobin solution. It was found possible to estimate accurately amounts as small as 1 mg. of hemoglobin in 100 cc. of plasma. No interfering substances were encountered in this test. Modifications of Wu's method were tried and found to possess no advantages over the original.

RATES OF HEMOLYSIS IN VARIOUS PRESERVATIVES

Preliminary experiments with the Rous-Turner mixture were sufficient to confirm the observations of those authors. The mixture used contained three volumes of blood, two volumes of 3.2 per cent sodium citrate (dihy-

9. Scudder, John; Drew, C. R.; Corcoran, D. R., and Bull, D. C.: Studies in Blood Preservation, J. A. M. A. **112**: 2263-2271 (June 3) 1939.

10. Wu, Hsien: Studies in Hemoglobin: III. An Ultra-Micro-Method for the Determination of Hemoglobin as a Peroxidase, J. Biochemistry **2**: 189-194 (Jan.) 1923.

dric)[11] in water and five volumes of 5.4 per cent dextrose in water. This mixture contains a total concentration of sodium citrate of 0.64 per cent, which is considered too high to administer intravenously. Another disadvantage is that to give 500 cc. of blood a total mixture of 1,666 cc. would be required.

Modifications of this mixture were tried, and the one finally adopted contained ten volumes of blood, thirteen volumes of 5.4 per cent dextrose in water and two volumes of 3.2 per cent sodium citrate (dihydric) in water. This mixture has a total concentration of 0.25 per cent sodium citrate and provides a total volume of 1,250 cc. as a vehicle for 500 cc. of blood. The concentration of citrate is so low that the modified mixture, unlike the original Rous-Turner mixture, can be safely administered intravenously without discarding the plasma.

A series of experiments was performed with four different preservatives: ten volumes of blood, thirteen volumes of 5.4 per cent dextrose in water and two volumes of 3.2 per cent dihydric sodium citrate in water; thirty-three volumes of blood, four volumes of 5.4 per cent dextrose in water and three volumes of 3.2 per cent dihydric sodium citrate in water; ten volumes of blood, thirteen volumes of 0.95 per cent sodium chloride in water and two volumes of 3.2 per cent dihydric sodium citrate in water, and twenty-three volumes of blood and two volumes of 3.2 per cent dihydric sodium citrate in water. In each instance the storage temperature was 5 C. and no attempt was made to exclude the air. The hemoglobin of the plasma[12] obtained by centrifuging specimens after thorough mixing was estimated at five day intervals of storage. Since the values obtained with this procedure depend on the number of erythrocytes subjected to hemolysis and the dilution of the plasma, recalculation was necessary in some mixtures to make hemoglobin values directly comparable with those obtained in mixtures containing ten volumes of blood and fifteen volumes of preservative. The results of these experiments are included in table 1. The values obtained show that there was progressive hemolysis in all preservatives during storage. The rates of hemolysis were uniformly low during the first ten days, but between the tenth and the fifteenth day there was a sharp increase in the rate of hemolysis in the mixtures containing little or no added dextrose, while in the presence of a high concentration of the sugar hemolysis proceeded more slowly. At the end of from thirty to thirty-five days of storage there was from twenty-five to fifty times as much hemolysis in the mixtures poor in dextrose. This is graphically presented in the accompanying chart. It is hard to translate determined hemoglobin values into gross color changes but we have repeatedly noted that plasma in a test tube 20 mm. in diameter must contain at least 10 mg. of hemoglobin per hundred cubic centimeters before it is visible as a faint pink discoloration. Greater concentrations are difficult to estimate by direct inspection, even for those who have had practice comparing their gross visual judgments with quantitative estimations. Plasma containing 100 mg. of hemoglobin per hundred cubic centimeters is distinctly tinged with red but would probably be considered suitable for transfusion by the average worker.

TABLE 1.—*Effect of Various Preservations on Hemolysis**

Experiment No.	Donor	Preservative, Volumes: Blood	Dextrose	Citrate	Sodium Chloride	Heparin	Dilution Factor†	Hemoglobin in Plasma, Mg. per 100 Cc. Days of Storage: 0	5	10	15	20	25	30	35
2	Wi.	23	..	2	..	..	× 0.33	1	8	70	174				
14	Nt.	23	..	2	..	..	× 0.33	1	19	57	165	469	1,080	1,503	2,556
15	Hy.	23	..	2	..	..	× 0.33	1	27	129	353	661	1,253	2,223	3,666
3	Wi.	10	..	2	13	..	.....	1	12	112	381				
16	Nt.	10	..	2	13	..	.....	3	27	82	301	303	1,440	2,820	4,100
17	Hy.	10	..	2	13	..	.....	2	41	138	629	1,270	2,450	4,310	5,120
6	Ht.	23	4	3	..	..	× 0.37	1	18	91	374	625	877	880	
9	Ga.	23	4	3	..	..	× 0.37	2	60	105	192	263	349		
1	Wi.	10	13	2	..	..	.....	1	5	11	20	30	60	47	60
4	St.	10	13	..	..	2	.....	6	15	19	34	56	52	138	
5	St.	10	13	2	..	..	.....	1	6	13	55	104	108		
7	Mc.	10	13	2	..	..	.....	1	5	11	24	31	66	77	87
12	Mc.	10	13	2	..	..	.....	1	6	10	14	30	39	79	
18	Nt.	10	13	2	..	..	.....	2	5	9	9	11	26	37	54
19	Hy.	10	13	2	..	..	.....	1	7	10	11	23	30	38	62

* Blood was stored at 5 C. in flasks with cotton plugs.
† Observed values were multiplied by the dilution factor for comparison with values in other mixtures.

THE EFFECTS OF TEMPERATURE ON HEMOLYSIS

It is generally stated that blood kept at room temperature will hemolyze more rapidly than in the refrigerator, and our experiences confirm this observation. Blood was drawn from one individual into the dextrose-citrate mixture previously described, apportioned into small flasks in 50 cc. samples and stored at room temperature (20 C.) in a dark cupboard. The flasks were placed in a shallow pan containing water and covered with a bell jar to increase the relative humidity and thus reduce evaporation through the cotton plugs. Plasma hemoglobin was determined after each two day period of storage. The values for plasma hemoglobin in milligrams per hundred cubic centimeters of plasma were as follows: no days, 2 mg.; two days, 60 mg.; four days, 95 mg.; six days, 86 mg.; eight days, 115 mg.; ten days, 94 mg.; twelve days, 458 mg. When these results are compared with those in experiment 12 (table 1), in which the blood was stored for the same period in the same preservative, but at 5 C., it will be seen that the same amount of hemolysis occurred in two days at 20 C. as in thirty days at 5 C.

11. The apparent deviation from the original concentration of sodium citrate is due to the fact that Rous and Turner used the salt with 5½ molecules of water of crystallization.

12. The term "plasma" is used in this paper to denote the noncellular portion of the blood plus the preservative solutions which dilute it.

A far more important temperature effect was discovered when we attempted to apply the facts obtained in the laboratory to the routine operation of a blood bank in the University Hospitals. In collecting blood to be preserved for transfusions it was the early practice to draw 500 cc. from each donor directly into an Erlenmeyer flask containing the preservative to be used. When 500 cc. of blood was drawn into from 50 to 100 cc. of sodium citrate solution no marked hemolysis was encountered, but when a similar amount was added to 750 cc. of the dextrose-citrate mixture (650 cc. of 5.4 per cent dextrose in water plus 100 cc. of 3.2 per cent dihydric sodium citrate in water) the blood in about one half of the flasks hemolyzed after only a few hours in the refrigerator. About 10 liters of blood was lost in this manner before the explanation became apparent. The temperature of the room where the blood was drawn was approximately 20 C. The temperature of the preservative had been brought to that of the room before the withdrawal of the blood. After following many false leads it was found that, if a 20 cc. sample was taken from the 1,250 cc. of blood mixture immediately after mixing and placed in the refrigerator beside the large flask, the blood in the small flask did not hemolyze while that in the large flask disintegrated within a few hours. Heating the preservative to body temperature before adding the blood did not prevent this initial hemolysis. Finally, the blood was drawn directly into the cold preservative which had just been taken from the refrigerator and the blood mixture was immediately returned to the cold room. This procedure effectively prevented initial hemolysis. This phenomenon has been encountered with citrated blood only when the room temperatures were extremely high (above 30 C.) and even then it has been prevented by drawing the blood into a flask placed in an ice bath. From the observations enumerated it seems logical to conclude that the almost immediate hemolysis observed in the earlier specimens was due to uneven cooling (from 37 to 5 C.) of various portions of a large volume of blood mixture which in some way destroyed many erythrocytes; when the blood was cooled rapidly and uniformly, this phenomenon did not occur. This would explain why hemolysis was rare in the presence of small quantities of citrate preservative but relatively frequent when larger volumes of blood mixture were employed without preliminary cooling. It should be emphasized that the phenomenon of hemolysis discussed in connection with the cooling of large quantities of blood occurs within a few minutes or a few hours after the blood is drawn and, so far as we can ascertain, has no relation to the slowly progressive hemolysis noted during many days of storage. Obviously, it is important to observe the precautions we have outlined if the dextrose-citrate mixture is to be used successfully.

THE RESISTANCE OF PRESERVED ERYTHROCYTES TO TRAUMA

Rous and Turner[4] demonstrated that there is no direct relationship between the resistance of red blood cells to trauma (such as shaking) and their ability to remain intact in hypotonic solutions. The erythrocytes of some species are normally more fragile than others under such conditions, although they may resist trauma very well. It seemed desirable to investigate further the effect of trauma on the preserved human erythrocytes, since this question has a direct bearing on the transportation of blood for military purposes and is indirectly concerned with the disintegration of transfused erythrocytes in the circulation.

An arbitrary shaking test was devised based on the method of Rous and Turner. About 16 cc. of blood mixture was divided into two equal parts, the control portion of 8 cc. being kept at the same temperature as the portion to be tested while the remaining 8 cc. was placed in a centrifuge tube of 15 cc. capacity, which was closed tightly with a rubber stopper. The tube was then clamped in a machine which shook the tube horizontally through its long axis at the rate of 260 complete strokes per minute for thirty minutes. At the end of the test both the shaken and the unshaken tubes were centrifuged simultaneously and the hemoglobin of the two samples of plasma was estimated. The difference between the plasma hemoglobin values in the two specimens was used to calculate the percentage of erythrocytes broken up by the shaking. This test was performed at five day intervals on stored blood from two donors in each of three preservatives. A summary of the results is given in table 2. While the values obtained and the method used leave much to be desired, the results show that there was a definite increase in fragility of red cells in all preservatives during the first ten days of storage. The erythrocytes stored in sodium chloride solutions were much more fragile than those stored in dextrose solutions. Whether this was due to some change in the cell membrane during storage in the saline solution or due to the protective action of the dextrose during shaking cannot be stated. Estimations of plasma viscosity and surface tension did not throw any light on the problem. The values obtained with citrated blood cannot be compared directly with those of the other two preservatives because each cubic centimeter contained 2.3 times as many erythrocytes, which in any standard shaking test

TABLE 2.—*Percentage of Erythrocytes Hemolyzed by Shaking**

Experiment No.	Donor	Preservative, Volumes				Percentage of Erythrocytes Hemolyzed by Shaking							
						Days of Storage							
		Blood	Dextrose	Sodium Chloride	Citrate	0	5	10	15	20	25	30	35
14	Nt.	25	..	..	2	0.2	1.7	2.6	7.7	2.2	4.0	6.7	3.9
15	Hy.	25	..	..	2	...	0.4	2.0	5.1	5.5	6.9	5.3	...
16	Nt.	10	..	13	2	0.1	0.7	2.8	2.5	6.6	2.3	3.1	9.0
17	Hy.	10	..	13	2	...	0.1	1.6	3.0	8.7	11.6	8.3	...
18	Nt.	10	13	..	2	0.1	0.1	0.9	1.0	1.3	1.0	1.7	2.1
19	Hy.	10	13	..	2	...	0.1	0.2	0.2	0.1	0.2	0.3	...

* Arbitrary shaking test: 260 strokes per minute for thirty minutes.

would increase the amount of trauma to which each cell was subjected. These observations would weigh heavily against the transportation of citrated blood for military purposes.

The data obtained from such violent shaking tests tend to show that the relatively slight trauma entailed in drawing the blood and mixing it with the preservative is probably not a significant factor in the development of hemolysis during storage.

THE EFFECT ON HEMOLYSIS OF THE EXCLUSION OF AIR DURING STORAGE

In the previous experiments blood mixtures were stored in flasks having the usual bacteriologic cotton plugs, which allowed free diffusion of atmospheric oxygen into the blood and of the blood carbon dioxide into the air. It seemed important to determine whether these changes had any appreciable effect on hemolysis during storage. Part of a blood preservative mixture was stored in the usual manner, while the other portion was poured into 50 cc. Erlenmeyer flasks, completely filling them. Rubber stoppers were then inserted so that the remaining air and some blood were displaced through glass capillaries in the stoppers, and the capillaries were sealed, aseptic precautions being employed. At each five day interval of storage a flask of the series was opened and the hemoglobin of the plasma estimated. The data are presented in table 3. It will be seen that in each experiment the blood stored with air excluded hemolyzed less rapidly than did the control blood exposed to the air, in the proportion of 1 : 1.5 up to 1 : 5. It should be noted, however, that this comparison was always made between fractions of the same blood mixed with the same lot of preservative; the hemoglobin values could not be duplicated in successive experiments, although the same relationship between two fractions of the same blood always held. This suggests either an individual difference between bloods or some slight variation in the preparation of the preservatives which has escaped detection.

The rates of hemolysis were studied in blood mixtures stored in Erlenmeyer flasks in which air of once or twice the volume of the mixture was trapped by closing the flasks tightly with rubber stoppers. Blood stored under these conditions hemolyzed no more rapidly than did blood exposed to the air or in an atmosphere of nitrogen.

Analyses of the content of oxygen, carbon dioxide and nitrogen conformed to the predictable values. The data will be published in another study.

Table 3.—*Effect of Exclusion of Air on Hemolysis**

Experiment No.	Donor	Preservative, Volumes: Blood	Dextrose	Citrate	Atmosphere	Hemoglobin in Plasma, Mg. per 100 Cc.: Days of Storage 0	5	10	15	20	25	30	35
12	Mc.	10	13	2	With air	1	6	10	14	20	29	79	..
					No air	1	5	5	6	7	10	16	..
7	Mc.	10	13	2	With air	1	5	11	24	31	88	71	87
					No air	1	..	..	6	..	..	17	..
20	Ko.	10	13	2	With air	1	..	..	40	..	..	..	..
					No air	1	..	..	22	..	..	..	..
22	Py.	10	13	2	With air	1	..	..	..	..	..	85	..
					No air	1	..	..	..	..	..	61	..
23	St.	10	13	2	With air	1	..	..	..	..	..	7	..
					No air	1	..	..	..	..	..	6	..
24	Py.	22	..	2	With air	3	..	..	..	..	..	3,040	..
					No air	3	..	..	..	..	..	1,512	..
25	St.	22	..	2	With air	2	..	..	..	..	..	3,310	..
					No air	2	..	..	..	..	..	1,622	..
21	Ko.	22	..	2	With air	2	..	..	1,420	..	..	..	..
					No air	2	..	..	640	..	..	..	..

* Blood stored at 5 C. in flasks with cotton stoppers or with air excluded.

PRACTICAL APPLICATIONS

Many of the facts demonstrated in the laboratory have been applied in the routine operation of the blood bank in the University Hospitals. The blood-dextrose-citrate mixture has proved practical and safe for human transfusions. Graduated Erlenmeyer flasks of 1,500 cc. capacity containing 650 cc. of 5.4 per cent anhydrous dextrose in water are autoclaved. Lots of 100 cc. of 3.2 per cent dihydric sodium citrate in water are autoclaved separately in flasks of 250 cc. capacity. These solutions are then stored in the refrigerator until required. Before the blood is collected, a two hole rubber stopper containing glass tubes is inserted in the mouth of the large flask, one tube being connected by rubber tubing to a glass adapter and a 16 gage needle and the other to a suction bulb. After the citrate solution is aspirated through the needle into the dextrose solution and the two are thoroughly mixed, the needle is inserted into the donor's anesthetized vein and the blood is drawn into the mixture by suction, if necessary, the flask being rotated gently to mix the blood and the cold preservative (5 C.). The flask is immediately stored in the refrigerator until required for transfusion, when the blood is thoroughly mixed and passed through a fine wire mesh filter into an arsphenamine tube which is connected by rubber tubing to the needle in the recipient's vein. The blood is not warmed and is allowed to run in by gravity.

Criteria for determining when preserved blood becomes unfit for use cannot be presented accurately. From experience we have adopted the arbitrary rule that citrated blood should be discarded after ten days of storage and blood in the dextrose-citrate mixture is considered unfit for transfusion after thirty days. With this practice there have been no unusual reactions which could be ascribed to disintegrated blood and no hemoglobinuria. The oldest blood used was transfused after storage in dextrose-citrate mixture for thirty-eight days. The recipient suffered no reaction, and no hemoglobin appeared in the urine.

In the operation of a blood bank where the daily number of transfusions is large the need for a preservative in which blood can be stored for more than seven days is not urgent. If the number of transfusions is not large, however, a proportionately larger loss is incurred among bloods belonging to the rarer groups AB and B. In a blood bank which averages four transfusions daily the mathematical probability that a blood of group AB or B will be required within seven to ten days is not great. Therefore any preservative which can prolong the period of potential usefulness of such a blood results in smaller losses.

There is little occasion in civil practice to transport blood considerable distances. However, this is an important problem in modern military medicine. Three facts presented in this paper bear directly on the technic of transportation. In addition to the property of inhibiting hemolysis, the blood-dextrose-citrate mixture protected the erythrocytes from the trauma of shaking better than the other preservatives studied. The fact that flasks closed with rubber stoppers preserved blood as well as those with cotton plugs is a great advantage in designing facilities for transportation. Lastly, in addition to retarding hemolysis, the storage of blood in flasks from which all air is displaced reduces to a minimum the possible trauma by shaking.

CONCLUSIONS

1. Progressive hemolysis occurs in human blood stored in any of the preservatives studied.

2. The rate of hemolysis is much greater when blood is stored at 20 C. than at 5 C.

3. The addition of large quantities of isotonic dextrose solution to blood slows considerably the rate of hemolysis as compared with that in blood stored with little or no added dextrose.

4. The Rous-Turner blood-dextrose-citrate mixture has been so modified that it can safely be given intravenously without discarding the plasma. This modification consists of ten volumes of blood, thirteen volumes of 5.4 per cent aqueous solution of anhydrous dextrose and two volumes of 3.2 per cent dihydric sodium citrate in water.

5. Blood stored in the modified blood-dextrose-citrate mixture will hemolyze only one twenty-fifth to one fiftieth as much in thirty days at 5 C. as will blood in sodium citrate alone or in sodium citrate plus sodium chloride.

6. The blood-dextrose-citrate mixture has proved safe and practical for human transfusions and is of distinct advantage in the operation of blood banks with a small volume of transfusions.

7. Hemolysis is less in blood stored in sealed flasks from which the air is completely displaced by the blood mixture than when the blood is exposed to the air.

8. Blood stored in flasks containing air trapped by rubber stoppers hemolyzes no faster than blood exposed to the air in cotton-plugged flasks.

9. Erythrocytes stored in the dextrose-citrate mixture resist destruction by shaking better than do those stored in sodium citrate alone or in citrate-saline mixtures.

10. The initial hemolysis encountered when blood is drawn into large volumes of preservatives can be prevented if the blood is cooled rapidly and uniformly by mixing it with preservatives which have been previously cooled to about 5 C.

STUDIES ON PRESERVED HUMAN BLOOD

II. DIFFUSION OF POTASSIUM FROM THE ERYTHROCYTES DURING STORAGE

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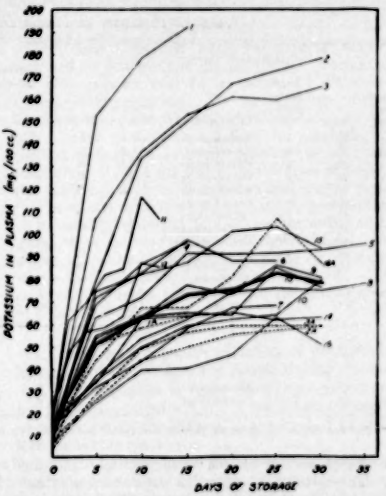
The concentration of potassium in the human erythrocyte is normally from seventeen to twenty times that in the serum.[1] Any change in this ratio occurring during the storage of blood is of clinical interest in view of the well known toxicity of potassium salts injected intravenously. Dulière[2] noted a progressive increase



Plasma potassium values in various experiments in which blood was stored in several types of preservatives. The observed values are connected with thin solid lines. In all except experiments 1, 2 and 3 the blood was diluted by preservative mixtures approximately in the proportion of ten volumes of blood to fifteen volumes of preservative. In the three instances the plasma mixture was more concentrated, and when recalculation is made for comparison the values are connected with the broken lines. The heavy solid line represents the mean of all the comparable values.

in the plasma potassium of human blood stored for ten days. Jeanneney and his co-workers[3] confirmed this observation and also demonstrated a coincidental diminution of plasma sodium.

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1. Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, Baltimore, Williams & Wilkins Company, 1932, vol. 1 (Interpretations), p. 753.

2. Dulière, W. L.: La teneur en potassium et l'âge d'un sérum, Compt. rend. Soc. de biol. **107**: 261-264 (April 23) 1931; Données expérimentales sur la répartition du potassium dans le sang extravasé: Comparaison entre la concentration physiologique dans le plasma et la concentration dans le liquide céphalorachidien, ibid. **108**: 416-418 (Sept 26) 1931.

3. Jeanneney, G., and Servantie, L.: Valeur du dosage de potassium comme test d'altération du sang conservé, Compt. rend. Soc. de biol. **129**: 1189-1190 (July 13) 1938. Jeanneney, G.; Servantie, L., and Ringenbach, G.: Les modifications du rapport potassium/sodium du plasma dans le sang citraté conservé à la glacière, ibid. **130**: 472-473 (Nov. 16) 1938.

The studies here recorded were undertaken with the hope that the increase in plasma potassium might serve as an index of corpuscular deterioration. Some of the data were published in a preliminary report [4] and later presented in an exhibit.[5] Scudder, Drew, Corcoran and Bull [6] have since published detailed experiments dealing with the same subject.

METHODS

Blood was drawn aseptically from the median basilic veins of healthy men into pyrex Erlenmeyer flasks of 1,000 cc. capacity containing the preservative solutions. After uniform suspensions had been attained by rotation, each blood mixture was apportioned equally into seven or eight 250 cc. Erlenmeyer flasks, which were stored under identical conditions. For each analysis a flask containing 50 cc. of blood mixture was withdrawn from storage, the contents were thoroughly shaken and centrifuged, and the plasma [7] was pipetted off for analysis. This procedure insured a constant proportion of cells and plasma in all specimens of a series derived from any initial blood mixture.

Estimations of the plasma potassium were made by the silver cobaltinitrite method of Truszkowski and Zwemer.[8] Analyses were made in triplicate and were compared with duplicate standards. The deviation from the mean in these determinations was generally less than 2 per cent. The possibility that ammonia contributed to the observed values was excluded by comparing plasma filtrate with ashed samples.

The solutions used were 5.4 per cent anhydrous dextrose U. S. P. (Merck & Co., Inc.) or anhydrous dextrose (Eastman Kodak Company) in water, 3.2 per cent sodium citrate (Merck's reagent grade, $Na_3C_6H_5O_7 + 2H_2O$) in water, 0.95 per cent sodium chloride U. S. P. in water and heparin (Connaught Laboratories) in water. These concentrations were considered isotonic because their freezing points were identical with that of blood serum (— 0.56 C.).

The refrigerator was cooled with salt brine which maintained the temperature between 3 and 5 C. Continuous thermal records were kept. The thick layer of frost on the open refrigeration coils insured a high relative humidity, so that evaporation from the blood mixtures was negligible.

INHERENT ERRORS OF THE PROCEDURE

The values obtained from the specimens in any series may be compared directly because the samples were derived from the same original mixture of blood and preservative solution. In comparing values obtained from one series with those of another series, however, the method of making the original dilutions must be considered. The preservative solution was accurately pipetted into the receiving flask but, under the clinical conditions of performing venesection, the blood was added to a predetermined mark on the sloping side of the Erlenmeyer flask. The error in measuring 160 cc. of blood by this method was determined experimentally as ± 50 cc., and the coefficient of variation [9] was calculated as 21.1 per cent. Since this value slightly exceeded the coefficient of variation of the observed maximal values for plasma potassium, it was concluded that the spread of the curves could be accounted for by fortuitous errors in dilution rather than by the other conditions of the experiments.

TABLE 1.—*Potassium in Plasma During Storage Under Various Conditions*

Experiment No.	Donor	Conditions of Storage: Temperature, C.	Conditions of Storage: Atmosphere	Dilution Factor*	Preservative, Volumes: Blood	Citrate	Dextrose	Sodium Chloride	Heparin	Potassium in Plasma, Mg. per 100 Cc.: Days of Storage 0	5	10	15	20	25	30	35
1	Wi.	5	Cotton plugs	× 0.33	21	2	..	..	..	5	51	59	64	..	..	..	..
2	Mc.	5	Air excluded	× 0.33	21	2	..	..	..	8	..	44	..	56	..	69	..
3	Ha.	5	Cotton plugs	× 0.27	33	3	4	..	..	4	39	50	57	60	60	60	..
4	Wi.	5	Cotton plugs	.....	10	2	..	13	..	12	69	87	97	..	..	..	..
5	Wi.	5	Cotton plugs	.....	10	2	13	..	..	8	63	72	92	98	92	94	97
6	Ha.	5	Cotton plugs	.....	10	2	13	..	..	9	72	83	98	89	80	..	..
7	St.	5	Cotton plugs	.....	10	2	13	..	..	14	32	44	59	68	69	..	..
8	Mc.	5	Cotton plugs	.....	10	2	13	..	..	10	37	54	63	75	77	76	79
9	Mc.	5	Cotton plugs	.....	10	2	13	..	..	13	54	64	78	74	87	81	..
10	St.	5	Cotton plugs	.....	10	..	13	..	2	16	35	50	60	63	65	81	..
13	Mc.	5	Air excluded	.....	10	2	13	..	..	13	55	64	69	65	96	77	..
14	Cl.	5	Air limited	.....	10	2	13	..	..	16	34	63	69	68	63	64	..
15	Cl.	5	Carbon dioxide	.....	10	2	13	..	..	10	75	83	86	102	104	94	..
16	Cl.	5	Nitrogen	× 1.7	5	2	13	..	..	12	42	66	66	82	108	86	..
					Coefficient of variation, %					39.0	29.4	21.7	20.9	18.2	19.6	15.7	
										Days of Storage 0	2	4	6	8	10	12	
11	Cl.	20	Air excluded	.....	10	2	13	..	..	18	62	70	82	85	117	107	
12	Cl.	20	Cotton plugs	.....	10	2	13	..	..	16	48	57	59	64	87	86	

* Observed values multiplied by the dilution factor for comparison with others.

ANALYSIS OF DATA

The pertinent data are presented in table 1. Since the most common dilution used was ten volumes of blood to fifteen volumes of preservative the observed values in plasma of this mixture are given and the

4. DeGowin, E. L.; Harris, J. E., and Plass, E. D.: Changes in Human Blood Preserved for Transfusion, Proc. Soc. Exper. Biol. & Med. **40**: 126-128 (Jan.) 1939.

5. DeGowin, E. L.; Harris, J. E., and Plass, E. D.: Preservation of Blood for Transfusion, Scientific Exhibit at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 15-19, 1939.

6. Scudder, John; Drew, C. R.; Corcoran, D. R., and Bull, D. C.: Studies in Blood Preservation, J. A. M. A. **113**: 2263-2271 (June 3) 1939.

7. For the sake of brevity the term "plasma" will be used to denote the noncellular portion of the blood plus the preservative solution with which it was diluted.

8. Truszkowski, Richard, and Zwemer, R. L.: Determination of Blood Potassium, Biochem. J. **31**: 229-233 (Feb.) 1937.

9. Coefficient of variation $= \frac{\text{Standard deviation} \times 100}{\text{mean}}$

Standard deviation $= \sqrt{\frac{\text{Sum of squares of deviations from the mean}}{\text{number of values}}}$

values in other dilutions were recalculated with a dilution factor to make them directly comparable (experiments 1, 2, 3 and 16).

When the values for plasma potassium are plotted on the ordinate against time of storage on the abscissa (as in the chart) it is evident that under all conditions investigated the rate of diffusion of that ion from the cells was rapid during the first five days, then slowed, and the plasma potassium approached a maximum in about fifteen days.

THE CONTRIBUTION OF HEMOLYZED CELLS TO THE RISE IN PLASMA POTASSIUM

The hemoglobin of the plasma was estimated by the method of Wu,[10] and the values obtained were utilized to determine the proportion of hemolyzed erythrocytes. The high values for plasma potassium could not be explained by the release of potassium from hemolyzed cells. One example will suffice. In experiment 3 hemolysis was much greater than in experiment 5, but the corrected values for plasma potassium show that diffusion of that ion proceeded to approximately the same extent in the two (table 2).

TABLE 2.—*Rate of Potassium Diffusion Compared with Rate of Hemolysis*

Days of Storage	Hemoglobin in Plasma, Mg. per 100 Cc.		Potassium in Plasma, Mg. per 100 Cc.	
	Experiment 3*	Experiment 5	Experiment 3*	Experiment 5
0	1	1	4	8
5	8	5	39	63
10	91	11	50	72
15	274	20	57	92
20	625	39	60	92
25	877	68	60	92
30	880	47	61	94
35	...	60	..	97

* Observed values multiplied by the dilution factor of 0.57 to be directly compared with values in experiment 5.

EFFECT OF SODIUM, CHLORIDE, DEXTROSE, CITRATE AND HEPARIN ON POTASSIUM DIFFUSION

The addition of various amounts of sodium, chloride, dextrose, citrate or heparin did not affect the rate of diffusion of potassium from the cells, although some of these substances influenced the rates of hemolysis to a marked degree.[11]

EFFECT OF ALTERATION OF THE CARBON DIOXIDE TENSION ON POTASSIUM DIFFUSION

Most of the experiments were performed with blood specimens exposed to the outside air through bacteriologic cotton plugs in the flasks, allowing free diffusion of carbon dioxide from the blood and oxygen into the blood. A few studies were made in which different gas tensions were established. In experiments 2, 11 and 13 the blood mixtures were stored with all air excluded. Erlenmeyer flasks of 50 cc. capacity were filled with blood mixtures, and the remaining air was displaced through capillary glass tubes in rubber stoppers. The tubes were then sealed in the flame. This procedure kept the oxygen and carbon dioxide tensions at approximately the original values; thus the carbon dioxide was much greater and the oxygen much less than in blood mixtures exposed to the air. The diffusion of potassium from the cells was not significantly altered by these conditions.

Storage under different atmospheres was also utilized. The blood mixture in experiment 14 was stored with an equal volume of air trapped by a rubber stopper. In experiment 15 the air was displaced by carbon dioxide, in experiment 16 by nitrogen. These conditions did not affect the potassium diffusion.

THE EFFECT OF TEMPERATURE ON POTASSIUM DIFFUSION

In experiments 11 and 12 blood mixtures were stored at room temperature (approximately 20 C.). In one series of flasks air was entirely excluded, while the flasks of the other series were closed with cotton plugs and placed in a pan of water covered by a bell jar to control evaporation. Hemolysis proceeded very rapidly at this temperature [11] but the potassium diffusion was not noticeably accelerated.

COMMENT

The data presented agree in general with those reported by Scudder and his associates.[9] Certain apparent discrepancies may be explained by differences in experimental procedure. The workers just cited stored large amounts of blood mixture in one flask and pipetted off samples of supernatant fluid for analysis. Their method assumes a uniform distribution of potassium throughout the plasma overlying the layer of cells, while the sampling depletes the plasma and makes recalculation necessary to accommodate for changes in dilutions. In the method reported here, all specimens for an experiment were derived from the original blood mixture, stored individually and analyses made on plasma from which the corpuscles had been centrifuged. Thus all samples of a series originally had the same proportion of cells to plasma.

CONCLUSIONS

1. There is progressive diffusion of potassium from human erythrocytes into the plasma during storage.

2. This diffusion is rapid during the first five days but becomes gradually less. A maximum concentration of potassium in the plasma is approached in from fifteen to twenty days.

3. The high values of plasma potassium attained in from fifteen to thirty days of storage cannot be accounted for by the release of that ion from completely hemolyzed cells.

4. Variations in the content of sodium, chloride, citrate and dextrose in the preservative mixtures or storage at different temperatures and in various atmospheres did not affect the diffusion rate.

10. Wu, Hsien: Studies on Hemoglobin: III. An Ultra-Micro-Method for the Determination of Hemoglobin as a Peroxidase, J. Biochemistry **9**: 189-194 (Jan.) 1923.

11. DeGowin, E. L.; Harris, J. E., and Plass, E. D.: Studies on Preserved Human Blood: I. Various Factors Influencing Hemolysis, this issue, p. 850.

The Neuroses in Aviation.—Nervous fatigue such as occurs in aviation does not involve functional disorders or disturbances and is readily amenable to rest. There is a point, however, where functional nervous disturbances may make their appearance and an actual neurosis intervene. There are two general types of neuroses which develop in airplane pilots. One type develops in relatively stable individuals, is not necessarily disabling and is an entity seen only among aviators. The other type develops in relatively unstable pilots or in relatively stable pilots under conditions of unusual stress, is disabling, and is identical with those neuroses seen in general practice. The former is known as aeroneurosis, while the latter is composed of the ordinary clinical neuroses which have flying as the principal inciting cause.—Armstrong, Harry G.: Principles and Practice of Aviation Medicine, Baltimore, Williams & Wilkins Company, 1939.

STUDIES ON PRESERVED HUMAN BLOOD

III. TOXICITY OF BLOOD WITH HIGH PLASMA POTASSIUM TRANSFUSED INTO HUMAN BEINGS

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In a previous paper [1] it was shown that some of the potassium in the erythrocytes of human blood diffused out during storage and that the maximum concentration of that ion in the plasma was approached in fifteen days. The rate or the amount of diffusion was not affected by the type of preservative used or the other conditions of storage studied. The question arose as to whether blood stored for two weeks or more would be toxic when transfused into human beings. Some clinical evidence existed indicating that such blood was not harmful, since various workers had occasionally transfused aged blood successfully before the phenomenon of potassium diffusion was known.

The subject of the toxicity of potassium salts administered intravenously has been reviewed by Scudder, Drew, Corcoran and Bull,[2] and the reader is referred to their paper for the bibliography. It is undoubtedly true that, if the concentration of potassium in the blood plasma reaching the heart is increased sufficiently, changes occur in the conducting mechanism, which may cause cardiac standstill. Winkler, Hoff and Smith [3] demonstrated that isotonic solutions of potassium chloride injected into the femoral veins of dogs cause alterations in the electrocardiogram when the serum potassium attains a concentration of from 5 to 11 millimols per liter and that cardiac arrest results when the level reaches from 14 to 16 millimols.

When Zwemer and Truszkowski [4] attempted to determine the lethal dose of potassium salts in various animals, intraperitoneal injection was finally adopted, so difficult was it to control the blood level by intravenous administration because of the rapidity of diffusion of the salts into the tissues. To illustrate this fact, one experiment in our laboratory may be cited. Two dogs were selected, each weighing 9.5 Kg. One animal was given an injection of 0.3 Gm. of potassium chloride in the jugular vein. The operation was completed in thirty seconds and the dog died within two minutes from cardiac arrest. The other dog received exactly the same dose of the salt in the same manner except that the time taken for injection was sixty seconds. No abnormal signs resulted, and the animal remained perfectly well. It is therefore evident that in considering the toxicity of potassium from intravenous administration the velocity of injection is an important factor. When a patient receives a transfusion in one median basilic vein it seems that the electrocardiogram would present more direct evidence of potassium toxicity than would estimations of the serum potassium of blood drawn from the other median basilic vein.

Experimental Data

	Transfused Blood							Observations on Recipient				
			Blood Mixture, Volumes					Serum Potassium,* Mg. per 100 Cc.				
Recipient Number	Days of Storage	Volume of Blood Mixture, Cc.	Blood	Dextrose	Citrate	Plasma Potassium,* Mg. per 100 Cc.	Total Plasma Potassium, Mg.	Velocity of Injection, Cc. per Min.	Before Transfusion	Middle of Transfusion	End of Transfusion	Clinical Symptoms	Electrocardiographic Changes
1	9	375	10	13	2	....	...	8.3	....	....	....	Urticaria	Tachycardia due to pruritus
2	9	600	25	..	2	....	...	10.8	....	....	....	None	No change
3	7	600	25	..	2	77.0	508	17.0	....	....	....	None	No change
4	17	1,250	10	13	2	52.0	533	13.5	24.7	24.8	25.4	None	No change
5	17	1,250	10	13	2	48.2	494	12.8	....	....	....	None	No change
6	23	1,250	10	13	2	60.8	623	27.0	....	....	....	None	No change
7	15	1,250	10	13	2	56.7	580	16.8	....	....	....	None	No change
8	23	1,250	10	13	2	51.0	522	19.2	17.4	16.9	16.6	None	No change
9	16	1,250	10	13	2	37.6	385	27.0	17.3	17.6	17.2	None	No change
10	18	1,250	10	13	2	54.1	554	14.7	18.0	18.3	17.1	None	No change
11	20	1,250	10	13	2	58.2	596	22.7	17.2	16.8	19.2	None	No change
12	24	1,200	10	13	2	78.6	786	48.2	17.1	17.5	18.7	None	No change
13	10	600	25	..	2	150.0	517	4.6	23.4	24.1	23.6	None	No change
14	10	500	25	..	2	148.0	473	41.6	15.5	16.7	17.2	None	No change

* Potassium values were obtained by the silver cobaltinitrite method. All determinations were checked by the Consolazio and Talbott chloroplatinate method.

The object of this study was to ascertain whether preserved blood stored long enough to attain maximum concentration of potassium in the plasma was toxic when transfused into human beings under the usual clinical conditions. From data presented in another study [1] it was evident that blood must be used which had been stored fifteen days or longer to attain the maximum concentration of plasma potassium. It had also been shown [5] that a practical method of preserving blood for that length of time without extensive hemolysis was the use of a mixture of ten volumes of blood, thirteen volumes of 5.4 per cent dextrose in water and two volumes of 3.2 per cent dihydric sodium citrate in water. This dilution of the plasma reduced the concentration of the potassium per cubic centimeter by about two-thirds the value obtaining in citrated blood of the same age, but the total amount of the ion in the plasma was approximately the same in the two mixtures since it was derived from the erythrocytes of 500 cc. of blood in both cases. Transfusion of citrated blood stored for fifteen days was considered too dangerous

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1. DeGowin, E. L.; Harris, J. E., and Plass, E. D.: Studies on Preserved Human Blood: II. Diffusion of Potassium from the Erythrocytes During Storage, this issue, p. 855.

2. Scudder, John; Drew, C. R.; Corcoran, D. R., and Bull, D. C.: Studies in Blood Preservation, J. A. M. A. **112**: 2263-2271 (June 3) 1939.

3. Winkler, A. W.; Hoff, H. E., and Smith, P. K.: Electrocardiographic Changes and Concentration of Potassium in Serum Following Intravenous Injection of Potassium Chloride, Am. J. Physiol. **124**: 478-483 (Nov.) 1938.

4. Zwemer, R. L., and Truszkowski, Richard: The Importance of the Cortico-Adrenal Regulation on Potassium Metabolism, Endocrinology **24**: 40-49 (Jan.) 1939.

5. DeGowin, E. L.; Harris, J. E., and Plass, E. D.: Studies on Preserved Human Blood: I. Various Factors Influencing Hemolysis, this issue, p. 850.

because of the high content of hemoglobin in the plasma, but such mixtures stored for ten days were used in some cases since the concentration of potassium per cubic centimeter of plasma was higher than in the more dilute dextrose-citrate mixture.

Fourteen patients requiring transfusions were given preserved blood by the usual technic of intravenous administration. In none was there clinical or electrocardiographic evidence of heart disease. Precautions were taken to insure the urine being alkaline before transfusion by the administration of sodium bicarbonate if necessary.[6] The blood mixture was allowed to run into the vein of the recipient by gravity. The velocity was varied by adjusting the height of the column of fluid and by using needles of two calibers, 16 gage and 20 gage. The preserved blood was not heated to body temperature before injection.

Immediately before, in the middle and at the conclusion of each transfusion blood specimens were withdrawn from the opposite arm of the recipient. A sample was also taken from the last 20 cc. of transfusion mixture remaining in the apparatus. Quantitative estimations of plasma or serum potassium were made in duplicate on each sample, using both a modification of the silver cobaltinitrite method of Truszkowski and Zwemer,[7] to be reported later by one of us (Harris), and also the chloroplatinate method of Consolazio and Talbott with slight modification.[8] The values obtained by the two procedures gave satisfactory checks, so that only the results by the silver cobaltinitrite method are published here.

When the blood samples were withdrawn from the recipient, electrocardiographic tracings were made with the three standard leads. All the pertinent data are presented in the table. No unusual clinical reactions were observed except for the appearance of generalized urticaria in case 1. Electrocardiograms during this transfusion showed tachycardia, which was attributed to the necessary scratching due to the pruritus. In a large series of transfusions of preserved blood no evidence has been obtained to attribute the occasional incidence of urticaria to the high potassium content of the plasma. There were no alterations of the electrocardiograms of the other thirteen recipients during transfusion. The velocity of injection in different experiments varied from 6.6 to 43.3 cc. of blood mixture per minute. Two of the recipients (cases 4 and 13) had slightly elevated initial serum potassium values and one (case 14) had a low level before transfusion. The highest concentration of plasma potassium in transfused blood was 148 mg. per hundred cubic centimeters, and this was given at the rate of 41.6 cc. of blood mixture per minute. The rise in serum potassium of the recipients during transfusion never exceeded 2.2 mg. per hundred cubic centimeters and was not accompanied by any symptoms.

CONCLUSIONS

The high plasma potassium content in blood preserved for thirty days is not toxic when the blood mixture is transfused into human beings at velocities of less than 43.3 cc. per minute. The concentrations of plasma potassium encountered in blood stored for one month are not high enough to cause significant increases in the serum potassium of the recipient.

6. DeGowin, E. L.; Warner, E. D., and Randall, W. L.: Renal Insufficiency from Blood Transfusion: II. Anatomic Changes in Man Compared with Those in Dogs with Experimental Hemoglobinuria, Arch. Int. Med. **61**: 609-630 (April) 1938.
7. Truszkowski, Richard, and Zwemer, R. L.: Determination of Blood Potassium, Biochem. J. **31**: 229-233 (Feb.) 1937.
8. Consolazio, W. V., and Talbott, J. H.: Modification of the Method of Shohl and Bennett for the Determination of Potassium in the Serum and Urine, J. Biol. Chem. **120**: 55-61 (Nov.) 1938.

STUDIES ON PRESERVED HUMAN BLOOD

IV. TRANSFUSION OF COLD BLOOD INTO MAN

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It is still common clinical practice to maintain at body temperature fluids which are being administered intravenously. This probably originated from clinical dicta which preceded the fundamental work of Seibert[1] on pyrogenic substances. Seibert demonstrated that certain river bacteria could live in distilled water and produce soluble substances called pyrogens, which were ultrafiltrable and were relatively thermostable. When these substances were injected intravenously into rabbits, febrile reactions ensued. This work has been amply confirmed both experimentally and clinically. Subsequent observations when the presence of pyrogens has been carefully excluded have disproved the theory that the temperature of the fluids is responsible for the production of chills and fever.

Rademaker[2] reported that intravenous administration to patients of fluids at 20 C. (68 F.) and at 43.3 C. (110 F.) caused no reactions. When cold solutions were given there was a slight drop in the body temperature without chills. Thompson[3] stated that injections given at 20 C. (68 F.) and 42 C. (107.6 F.) produced no chills or fever in patients but that cold fluids usually lowered the blood pressure slightly. In an extensive study on rabbits, Banks[4] not only confirmed the work of Seibert but concluded that solutions administered parenterally at from 68 to 113 F. (20 to 45 C.) had no influence on the body temperature.

A rough calculation can be made showing the effect which the intravenous injection of a cold solution would have on the body temperature if the heat regulatory mechanisms were suspended, and the assumption is made that the thermal capacity of the parenteral fluid is the same as that of the body tissues. A simplified formula expressing the physical principle of equal heat exchanges can then be stated: $M_1(t_1 - t) = M_2(t - t_2)$ where M_1 is the mass of parenteral fluid injected, M_2 the body weight, t_1 the temperature of the fluid, t_2 the original body temperature, and t the resultant temperature of the transfused body. If one takes a specific clinical problem, when 600 cc. of fluid at 5 C. (41 F.) is injected intravenously into a man weighing 70 Kg. and having a temperature of 37 C. (98.6 F.) the following equation results: $0.6\ (5 - t) = 70\ (t - 37)$, or $t = 36.72$ C. The body temperature would then be reduced by only 0.28 C.

This conception is of practical clinical importance because considerable labor is expended by the intern and nursing staff and frequently costly apparatus is used in an effort to maintain parenteral fluids at body temperature during injection. When the parenteral

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1. Seibert, F. B.: Fever-Producing Substance Found in Some Distilled Waters, Am. J. Physiol. **67**: 90-104 (Dec.) 1923; The Cause of Many Febrile Reactions Following Intravenous Injections, ibid. **71**: 621-631 (Feb.) 1925.
2. Rademaker, Lee: The Cause and Elimination of Reactions After Intravenous Infusions, Ann. Surg. **92**: 193-201 (Aug.) 1930.
3. Thompson, S. A.: Preparation of Dextrose and Saline Solutions and Apparatus for Intravenous and Subcutaneous Use, Am. J. Surg. **22**: 127-134 (Oct.) 1933.
4. Banks, H. M.: A Study of Hyperpyrexia Reaction Following Intravenous Therapy, Am. J. Clin. Path. **41**: 260-291 (May) 1934.

fluid is blood, there is the danger of hemolysis from the injudicious application of heat. Baker [5] reported a case in which blood inadvertently heated to 130 F. (54.4 C.) produced transfusion anuria. He also pointed out the lack of necessity of heating transfused blood and stated that transfusions were given at room temperature at the Manchester Royal Infirmary with impunity.

The problems introduced by the use of preserved blood for transfusions make imperative a study of the effects of injecting fluids at room temperature or lower. The blood mixtures are usually stored in large flasks in volumes of 500 to 1,000 cc. at 5 C. When the blood mixture is required for transfusion, time may be consumed in warming such a quantity to body temperature or even to room temperature. Moreover, evidence has been presented in another paper [6] to show that procedures which vary the temperature of different parts of a blood mixture tend to promote hemolysis.

Because of these considerations, a study of the effects of transfusion of unheated blood was made. This study was divided into two parts: first, detailed observations on ten patients receiving transfusions, and, second, a careful check of all patients receiving transfusions of cold preserved blood in the University Hospitals for a period of eleven months.

Ten patients receiving transfusions were carefully studied. A flask of preserved blood was taken from the refrigerator at 5 C. and within a few minutes was being administered to the recipient. The apparatus used for injection consisted of an arsphenamine tube of 800 cc. capacity communicating with the recipient's vein by about 4 feet of gum rubber tubing, a glass adapter and a needle. The velocity of injection was controlled by varying the height of the column of fluid and the use of either 20 gage or 16 gage needles. The temperature of the transfused blood was observed by inserting a thermometer into the rubber tubing adjacent to the point where the blood mixture ran into the needle in the recipient's vein. The blood mixture was poured into the arsphenamine tube at approximately 5 C., but as it ran through the rubber tubing it approached the temperature of the room. The temperature of the blood at the recipient's vein was thus lower near the beginning of the transfusion and also varied with the velocity of injection. During the transfusion frequent observations were made of the recipient's rectal temperature and blood pressure. The data are summarized in table 1.

In conducting this series of experiments the attempt was made to simulate the usual conditions under which this particular apparatus is used and also to produce the extreme variations to which the procedure might be subjected clinically. Thus the minimum temperature of the transfused blood at the recipient's vein ranged in different transfusions from 25 to 15 C. and the velocity of transfusion varied from 6.0 to 42.8 cc. per minute. No clinical symptoms or signs were noted in any of the ten recipients. The rectal temperatures either remained constant or declined a maximum of 0.2 degree C. Patient 7 had fever (initial temperature 101.2 F.), which was not affected by the transfusion. The blood pressure readings varied slightly during the transfusion, but most of the readings were within the limits of error of the method. In case 1 the systolic pressure rose 25 mm. of mercury and the diastolic pressure increased by 10 mm., but the patient was obviously apprehensive. In case 6 the systolic pressure fell 30 mm. and the diastolic pressure 10 mm. This could be accounted for by assuming some initial emotional elevation.

All the patients in the series either volunteered the information, or affirmed when asked, that the vein into which the blood was running felt cool or cold but that this symptom was not such as to cause annoyance. When the blood was injected into the median basilic vein, palpation of the corresponding cephalic vein often gave a sensation of cold to the examiner.

The second part of the study consisted of the application of this method of transfusion of cold preserved blood for routine hospital purposes. In the University Hospitals from Feb. 14 to Aug. 3, 1939, a total of 568 transfusions of cold blood were given by means of the general procedure outlined. The transfusions were administered by many persons and at different velocities with room temperatures varying widely. The blood was usually injected through a 20 gage needle, although smaller needles were used for children. Each recipient was examined within twenty-four hours after the transfusion by an intern attached to the Blood Transfusion Laboratory, who himself tested the urine for the presence of hemoglobin, noted any unusual symptoms during or after transfusion and recorded any elevation of temperature.

The results of these observations are shown in table 2.

Whether any of the reactions reported could be ascribed to the temperature at which the blood was

TABLE 1.—*Experimental Data*

Recipient			Transfused Blood				Effects on Recipient		
Recipient Number	Body Weight, Kg.	Initial Rectal Temperature, C.	Room Temperature, C.	Total Volume, Cc.	Velocity of Injection, Cc. per Min.	Minimum Temperature of Blood Mixture at the Vein of the Recipient, C.	Fluctuation of Rectal Temperature, C.	Fluctuation of Blood Pressure, Mm. of Mercury*	Clinical Symptoms
1	68.1	37.5	....	600	6.0	23.0	0	+25/10	Excited
2	73.1	37.6	....	600	8.0	23.0	−0.1	.....	No symptoms
3	73.1	37.4	....	600	6.6	24.0	0	.....	No symptoms
4	45.0	38.1	29.5	600	30.0	19.0	−0.2	+5/10	No symptoms
5	70.9	38.0	29.5	600	20.0	18.5	−0.1	0	No symptoms
6	65.9	37.6	24.0	600	20.0	16.0	−0.1	−30/10	No symptoms
7	77.2	38.4	21.0	600	42.8	14.5	0	+0/5	No symptoms
8	68.1	38.2	28.0	600	30.0	19.0	0	+10/15	No symptoms
9	56.5	37.2	28.0	1,250	22.7	17.0	−0.1	0	No symptoms
10	50.0	37.4	32.0	1,200	40.0	15.0	0	+5/5	No symptoms

* The first value denotes variation in systolic pressure, the second, diastolic.

5. Baker, S. L.: Urinary Suppression Following Blood Transfusion, Lancet **1**:1390-1394 (June 12) 1937.

6. DeGowin, E. L.; Harris, J. E., and Plass, E. D.: Studies on Preserved Human Blood. I. Various Factors Influencing Hemolysis, this issue, p. 850.

transfused can be answered only by indirect evidence. The incidence of 8.5 per cent reactions of all varieties seems too small to ascribe to a procedure used in all cases. The hemoglobinuria was adequately explained by other causes in both cases; one patient received incompatible blood and the other was given blood which had a high concentration of plasma hemoglobin. No correlation between the procedure and the occurrence of urticaria could be found.

The presence of pyrogens in the parenteral fluids mixed with the transfused blood and in the apparatus should be considered. All the equipment utilized in the administration of blood and parenteral fluids was prepared in a central laboratory. The fluids for intravenous use were manufactured in the same place, one source of distilled water being used for parenteral fluids, for cleansing apparatus and for blood preservatives. All of these functions were under the same general supervision so that if pyrogens were present in the transfused blood it was to be expected that they would also occur in the parenteral solutions in about the same proportion. This was apparently a fact, although the only data available cover the month of July 1939.

TABLE 2.—*Results of Tranfusions from Feb. 14 to Aug. 3, 1939*

Symptoms	Number	Percentage
No symptoms or signs	520	91.5
Chills only	6	1.0
Chills and fever	31	5.4
Urticaria only	8	1.4
Hemoglobinuria	2	0.3
Abdominal pain	1	0.1
Total	568	99.7

During that period 1,076 intravenous infusions were given at room temperature and in thirty-two cases (2.9 per cent) there were associated chills and fever. For the same time the statistics for transfusions of preserved blood given cold were as shown in table 3.

TABLE 3.—*Results of Transfusions During July 1939*

Symptoms	Number	Percentage
No reaction	103	91.9
Chills and fever	7	6.2
Hemoglobinuria	1	0.8
Urticaria	1	0.8
Total	112	99.7

The source of the febrile reactions in both parenteral infusions and blood transfusions is still not explained, but the incidence in either case is so low that it cannot be attributed to the temperature of the fluid administered.

CONCLUSIONS

1. A detailed study of ten patients who were given transfusions of blood mixtures varying from 25 to 15 C. and at velocities from 6.0 to 42.8 cc. per minute revealed no significant lowering in the body temperature, no consistent changes in blood pressure and no untoward clinical symptoms.

2. Preserved blood has been administered without preheating in 568 cases with no reactions which could be attributed to the procedure.

3. The practice of transfusing preserved blood cold is a great convenience in conserving time and prevents untoward reactions involved in the process of heating it.

4. Parenteral fluids other than blood can be administered at room temperature with safety.

STUDIES ON OXYURIASIS

XXII. THE EFFICACY OF GENTIAN VIOLET IN THE TREATMENT OF PINWORM INFESTATION

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The inadequacy of available therapeutic measures for the control of pinworm (Enterobius vermicularis) infestation is well known to those physicians who have had experience in dealing with this troublesome problem. In fact, the failure of conventional methods of therapy in these cases is sometimes a source of embarrassment to the physician, particularly when these patients return time after time for further treatment. Unfortunately, either the large majority of the published articles on the treatment of this disease have been based on inadequate numbers of cases or reliance has been placed on the patient's history for the diagnosis and on clinical observations for the efficacy of the treatment.

Undoubtedly the pinworm is the most common and widespread of the animal parasites infesting man in this country. Improvements in sanitation and an efficient meat inspection service have limited the spread of many animal parasites, but modern sanitation has apparently had little effect in limiting the spread of the pinworm. Cram, Jones, Reardon and Nolan [1] have reported an incidence of pinworms of 35.4 per cent in 628 persons from the general population of Washington, D. C. While these cases did not represent a random sampling of the population and the incidence figure in this group is probably higher than is the general incidence figure, yet the latter figure is probably an impressive one.

Prior to the development of the NIH anal swab described by Hall,[2] there was no efficient method available for the diagnosis of pinworm infestation. Ordinary methods of stool examination, such as are used for the detection of other intestinal parasites, are not of value in the case of the pinworm for the reason that the ova of the parasite are not deposited in the intestinal tract of the host but are expelled by the gravid female worm after its migration out of the anal canal. In this connection, Wright and Cram [3] found that only fourteen of 102 known pinworm infestations were detected on stool examination, while Sawitz, Odom and Lincicome [4] detected 14 and 18 per cent of 131 positive cases by brine and zinc sulfate flotations, respectively, whereas 72 per cent of these positive cases were detected by one NIH swab examination and 99 per cent by seven NIH swab examinations.

The NIH swab consists of a glass rod tipped with a small square of cellophane. This rod is enclosed in

1. Cram, Eloise B.; Jones, Myrna F.; Reardon, Lucy, and Nolan, Mabelle O.: Studies on Oxyuriasis: VI. The Incidence of Oxyuriasis in 1,272 Persons in Washington, D. C., with Notes on Diagnosis, Pub. Health Rep. **52**: 1480-1504 (Oct. 22) 1937.

2. Hall, Maurice C.: Studies on Oxyuriasis: I. Types of Anal Swabs and Scrapers, with a Description of an Improved Type of Swab, Am. J. Trop. Med. **17**: 445-453 (May) 1937.

3. Wright, Willard H., and Cram, Eloise B.: Studies on Oxyuriasis: IV. Some Aspects of the Problem of Therapy, Am. J. Dis. Child. **54**: 1276-1284 (Dec.) 1937.

4. Sawitz, Willi; Odom, Vada L., and Lincicome, David R.: The Diagnosis of Oxyuriasis: Comparative Efficiency of the NIH Swab Examination and Stool Examination by Brine and Zinc Sulfate Flotation for Enterobius Vermicularis Infection, Pub. Health Rep. **54**: 1148-1158 (June 30) 1939.

a glass test tube for convenience and for the prevention of infection in handling. In use, the cellophane tip is stroked over the perianal region and pinworm eggs, if present, will usually adhere to the cellophane which may be removed, mounted between a glass slide and coverslip and examined for ova. This method of diagnosis is superior to any other practical method of examination and has been used by us for making diagnoses and for checking the efficacy of treatment.

Another important fact disclosed by investigations in our laboratory has been that relating to the frequent occurrence of familial pinworm infestations. Wright and Cram [3] have pointed out the necessity from a control standpoint of treating pinworm infestation on a familial basis on the ground that it is useless to treat individuals in a family or household in which other individuals, infested with pinworms, are left untreated. The abundant opportunities for reinfestation in such households are indicated by the results of Reardon [5] of egg counts in twenty gravid female pinworms in which the mean of the counts was 11,105 and by the experience of Nolan and Reardon,[6] who were able to recover pinworm ova from objects at all levels in all rooms in infested households thus indicating the possibilities of airborne infections. In view of the practical impossibility of applying hygienic measures in a manner sufficiently rigorous to control pinworm infestations, the use of chemotherapy would appear to be necessary in most cases for the successful attack on this parasite.

EFFICACY OF OTHER METHODS OF THERAPY

In experiments in this laboratory, single-dose treatments with tetrachlorethylene or hexylresorcinol orally have not proved satisfactory. While tetrachlorethylene is probably the most effective of the available single-dose treatments, as shown by Wright, Bozicevich and Gordon,[7] it is not sufficiently effective to be of value in the treatment of familial pinworm infestations. Under certain conditions of temperature and moisture, pinworm eggs may remain viable in the laboratory for two weeks or longer. If the ova are equally resistant under household conditions, patients freed of pinworms by a single-dose treatment may be subjected to frequent reinfestation over this period of time.

These facts led Wright, Brady and Bozicevich [8] to a search of some method of treatment which could be administered over a period of time sufficient to allow for desiccation of the pinworm ova in the patient's surroundings, with a view of eliminating the possibilities of reinfestation. Santonin, one of the few known anthelmintics which can be given with safety in repeated treatments, was not found sufficiently valuable to warrant its use in this connection. Only eleven, or 55 per cent, of twenty cases treated with santonin over a period of ten days were negative on post-treatment swab examinations. As an inadequate number of post-treatment swabs was obtained in some of these cases, it is probable that the efficacy of the treatment was actually at the rate of less than 50 per cent. Hexylresorcinol enemas, first used by Brown,[9] have proved relatively effective when compared with many other methods of treatment. Of twenty-seven cases in which such enemas were used, eighteen, or 66⅔ per cent, were negative on post-treatment swab examinations. The chief objections to the use of hexylresorcinol enemas are those concerned with the high cost of the drug and the labor in administering the treatment to several individuals in the family at the same time. For these reasons this treatment is not adapted for general use in familial infestations. The routine treatment with hexylresorcinol orally and by enema, as recommended by Craig and Faust,[10] has been used in a few cases but not one of the individuals was freed from pinworms by this method of therapy.

Experience with the experimental use of the aforementioned methods of therapy led us to the view that a satisfactory treatment for pinworm infestation should fulfil certain specifications, as follows: 1. The drug should be sufficiently safe that it can be administered in repeated treatments over a period of time. 2. It should be highly effective. 3. It should be of reasonable cost. 4. It should be of such a nature that it can be easily administered and used with a minimum of effort in large families in which many persons are infested.

As none of the traditional methods of therapy which we had tested entirely fulfilled these specifications, we have carried out tests with gentian violet, one of the few known anthelmintics which can be given with safety in repeated treatments over a period of time.

PREVIOUS USE OF GENTIAN VIOLET

Our application of gentian violet in the treatment of oxyuriasis followed the employment of the drug in a number of other conditions. Young and Hill,[11] who were apparently the first to use the dye medicinally, employed doses of from 5 to 7 mg. per kilogram of body weight administered intravenously for the treatment of septicemia and local infections. Later, Faust and Yao [12] employed gentian violet orally and intravenously in the treatment of Clonorchis sinensis infestations. However, the drug has been used more extensively for Strongyloides stercoralis infestation than for any other parasitic condition. Sioe's [13] report on the use of the dye in this condition was followed closely by that of de Langen; [14] in addition, the experiments of Faust [15] added considerably to our knowledge of the value of the drug in strongyloidosis.

EXPERIMENTAL PROCEDURE

Prior to treatment for pinworms, a clinical history was obtained and a physical examination made on each patient to ascertain whether any contraindications existed for the treatment. In addition to the diagnostic N1H swab examinations, a stool specimen from each patient was examined by one of the flotation technics. When the stool examination showed eggs of Ascaris lumbricoides, the patient was treated for the removal of this parasite before gentian violet was prescribed.

5. Reardon, Lucy: Studies on Oxyuriasis: XVI. The Number of Eggs Produced by the Pinworm, Enterobius Vermicularis, and Its Bearing on Infection, Pub. Health Rep. **53**: 978-984 (June 17) 1938.

6. Nolan, M. O., and Reardon, Lucy: Studies on Oxyuriasis: XX. The Distribution of the Ova of Enterobius Vermicularis in Household Dust, J. Parasitol. **25**: 173-177 (April) 1939.

7. Wright, Willard H.; Bozicevich, John, and Gordon, Leon S.: Studies on Oxyuriasis: V. Therapy with Single Doses of Tetrachlorethylene, J. A. M. A. **109**: 570-573 (Aug. 21) 1937.

8. Wright, Willard H.; Brady, Frederick J., and Bozicevich, John: Studies on Oxyuriasis: XIV. Controlled Tests with Various Methods of Therapy, Pub. Health Rep. **54**: 2005-2016 (Nov. 10) 1939.

9. Brown, H. W.: Treatment of Pinworm (Enterobius Vermicularis) Infestation with Hexylresorcinol, Proc. Soc. Exper. Biol. & Med. **30**: 221-224 (Nov.) 1932.

10. Craig, Charles Franklin, and Faust, Ernest Carroll: Clinical Parasitology, Philadelphia, Lea & Febiger, 1937.

11. Young, Hugh H., and Hill, Justina H.: The Treatment of Septicemia and Local Infections by Intravenous Injections of Mercurochrome-220 Soluble and of Gentian Violet, J. A. M. A. **82**: 669-675 (March 1) 1924.

12. Faust, Ernest Carroll, and Yao, Ke Fang: Specific Therapeusis in Clonorchis Infections, Arch. f. Schiffs- u. Tropen-Hyg. **30**: 383-391 (Sept.) 1926.

13. Sioe, Kwa Tjaon: Strongyloidosis and Its Treatment with Gentian Violet, Far East. A. Trop. Med. Tr. 7 Cong. Calcutta (British India [Calcutta] December 1927) **3**: 200-204, 1928.

14. de Langen, C. D.: Anguillulosis and the Syndrome of the "Idiopathic Hypereosinophilia," Mededeel. v. d. dienst d. volksgezond. in Nederl-Indie, foreign ed. **17**: 513-529, 1928.

15. Faust, Ernest Carroll: Strongyloides and Strongyloidiasis, Rev. parasitol. clin. y lab. **2**: 315-341 (May-June) 1936.

In order to check the efficacy of the treatment, seven consecutive daily NIH swabs have been made beginning at certain intervals after the completion of the treatment. Cram, Jones, Reardon and Nolan [1] have shown that six such swab examinations will detect nearly all pinworm infestations, while the work of Sawitz, Odom and Lincicome [4] confirmed these observations and indicated that seven NIH swab examinations will disclose over 99 per cent of the positive cases. In the absence of precise information on the prepatent period of the pinworm, Enterobius vermicularis, the timing of these swabs has been based largely on the results of the self-infestation experiments of Leuckart,[16] Grassi [17] and Calandruccio,[18] these experiments indicating apparently that gravid females of E. vermicularis begin to migrate between the fourteenth and the twenty-first day after infestation. On the basis of this evidence, the post-treatment swabs were started in a large number of patients on the tenth to the fourteenth day after the end of the treatment.

TREATMENT WITH ENTERIC COATED GENTIAN VIOLET TABLETS N. N. R.

In a preliminary communication, Wright, Brady and Bozicevich [19] reported on the treatment of a total of 163 patients with enteric coated gentian violet tablets N. N. R., the post-treatment checks being made by means of seven consecutive daily NIH swabs beginning on the tenth to the twenty-first day following the end of treatment. The daily dosage of gentian violet prescribed for adults was that used by Faust [20] and for children that used by Kouri, Sellek and Rivera [21] in the treatment of Strongyloides stercoralis infestations. Adults received two 32 mg. (one-half grain) tablets before meals three times daily. Individuals 16 years of age and younger received approximately 10 mg. a day for each year of apparent (not chronological) age. Thirty-six of the 163 patients were classed as non-cooperative, since they either failed to complete the treatment or failed to furnish post-treatment swabs; five patients were advised to discontinue treatment because of reactions that were due, in part at least, to the gentian violet therapy. Of the remaining 122 individuals 107, of whom eighty-five were under 16 years of age and twenty-two were over this age, were given the drug in daily doses over a period of ten days, while the remaining fifteen individuals, all children, received the drug over a period of eight days, were allowed to rest for seven days and were then treated for an additional period of eight days. A total of 112, or 92 per cent, of these 122 completed cases were negative on the post-treatment swab examinations. All of the fifteen patients receiving the divided course of treatment were negative.

Another series of patients comprising twelve children and three adults has completed treatment since the foregoing cases were reported. These patients were treated with the same dosage of the same type of tablet administered in two courses of eight days each with a week's interval between courses. Twelve, or 80 per cent, of the fifteen cases were negative on the post-treatment checks taken from fourteen to twenty-one days after completion of the treatment.

As opportunity presented itself, we continued observations on some of the negative patients over longer periods of time. Nineteen patients, mostly boys in an institution, were selected for a further check on freedom from infestation at intervals varying from seven weeks to thirty-four weeks following the end of treatment. The results of a recheck with seven additional daily post-treatment swabs indicated that fifteen of the nineteen individuals were still negative for pinworm ova at the aforementioned intervals after treatment. This result, as we were to learn later, was considerably better than that obtained when noninstitutionalized individuals were checked with post-treatment swabs beginning with the forty-second day after the end of the treatment.

In addition to this check, we kept under continuous observation for periods varying between thirty-eight and fifty-three days after the end of treatment four patients who were swabbed either once or twice a day during this time. At the end of these periods these patients were negative for pinworm ova on swab examinations.

The necessity of checking the validity of our assumption that the life cycle of the pinworm requires from fourteen to twenty-one days became apparent as the experiments progressed. If the parasite actually requires more than twenty-one days to develop to maturity, negative swabs taken prior to that time might give false information. Under such circumstances, young larvae not removed by the treatment might develop to maturity and ova from migrating worms would be deposited after the last swab examination had been made. Thus, in order to add to the critical value of our post-treatment checks, the post-treatment swabs on the remaining patients were started on the forty-second day after the end of the treatment.

Naturally, the prolonged time element in this type of experiment with patients over whom we could exercise no semblance of control adds considerably to the possibilities of reinfestation, since these patients were not hospitalized individuals but were outpatients who carried on their usual duties and maintained the customary routine of their lives. No doubt many of them were subjected to reinfestation with pinworm ova and possibly some of them acquired a reinfestation, in which event the positive observations on the post-treatment swabs would not indicate failure of the treatment. The longer the period between the termination of the treatment and the post-treatment swabs, the more likelihood there would be that positive results indicated a reinfestation and not failure of the treatment.

Further treatment with enteric coated gentian violet tablets N. N. R. was carried out on nineteen additional patients (fourteen children and five adults) and for these patients the post-treatment swabs were started on the forty-second day following the completion of the treatment. These patients were given the same course of treatment, i. e. the gentian violet was administered in the same dosage as used previously and was given over a period of eight days, stopped for seven days and then repeated for an additional period of eight days. Of the nineteen patients eleven, or 58 per cent, were negative on the post-treatment swabs.

16. Leuckart, Rudolph: Die menschlichen Parasiten und die von ihnen herrührenden Krankheiten, Leipzig and Heidelberg **2**, part 2, pp. 257-512, 1868.

17. Grassi, B.: Note intorno ad alcuni parassiti dell' uomo, Gazz. d. osp. Milano **2**: 433-439, 1881.

18. Calandruccio, S.: Animali parassiti dell' uomo in Sicilia, Atti Accad. Gioenia di sc. nat. in Catania **2**: 95-135, 1889-1890.

19. Wright, Willard H.; Brady, Frederick J., and Bozicevich, John: Studies on Oxyuriasis: VIII. A Preliminary Note on Therapy with Gentian Violet, Proc. Helminthol. Soc. Washington **5**: 5-7 (Jan.) 1938.

20. [Faust, E. C.]: Gentian Violet Therapy for Strongyloides Infection, editorial, Internat. M. Digest **17**: 57-58 (July) 1930.

21. Kouri, Pedro; Sellek, Antonio, and Rivera, Rafael: Sobre el tratamiento de la strongyloidosis por el violeta de genciana, Rev. parasitol., clin. y lab. **2**: 7-16 (Jan.-Feb.) 1936.

TREATMENT WITH GENTIAN VIOLET TABLETS PROVIDED WITH A WATER SOLUBLE COATING

During the course of our experiments it had been occasionally reported to us that the stools of certain patients were not consistently colored by the dye during the course of treatment. In order to check on the disintegration of the tablets, all stools passed by five patients during the course of treatment were screened and it was found that these patients occasionally passed whole or incompletely disintegrated tablets.

As a result, we were interested in the suggestion of Dr. John F. Kessel that we try a tablet provided with a new type of water-soluble coating. Since Dr. Kessel's suggestion, the effectiveness of the new type of coating from the standpoint of timed disintegration of the tablets in the small intestine has been demonstrated radiographically by Worton, Kempf, Burrin and Bibbins.[22]

The coating in question consists of the following ingredients in the proportions named: stearic acid 55.5, carnauba wax 24.25, petrolatum 1.75, powdered agar 13.9 and powdered elm bark 4.6.

Gentian violet tablets furnished us by the manufacturer were provided with coatings which permitted disintegration in two and one-quarter, four, four and one-half and five hours, respectively. Worton and his associates noted that the four and five-hour coated tablets invariably opened in the small intestine. We have found the four and one-half hour coated tablets to be as effective as any of the others and have prescribed tablets with this coating for persons of all ages. The preliminary results of these experiments were reported by Wright and Brady.[23]

A total of 121 persons have been treated with gentian violet tablets with the water soluble type of coating. Of these, fifty-three cases were incomplete, the remaining sixty-eight persons (fifty children and eighteen adults) having taken the prescribed number of tablets and having furnished the required number of post-treatment swabs. The dosage of gentian violet for these cases was the same as that employed in the use of the enteric coated tablets. However, in this case the tablets were given one hour before meals. The treatment regimen consisted of two periods of eight days each, separated by a rest period of seven days. Seven consecutive daily swab examinations on these sixty-eight persons beginning on the forty-second day after the completion of the treatment showed fifty-four, or 79 per cent, to be freed from pinworms.

REACTIONS ENCOUNTERED IN THE GENTIAN VIOLET TREATMENT FOR PINWORMS

We have encountered similar untoward effects with both types of tablet used in these experiments. A total of 182 patients took the entire course of treatment with the enteric coated tablets, although only 156 (shown in the table) furnished the required number of post-treatment swabs. Of the 182 patients, 114 noticed no ill effects from the treatment. In the remainder, untoward symptoms occurred in the form of nausea thirty-four times, vomiting twenty-nine, diarrhea eighteen, constipation two, headache one, dizziness three, lassitude two and mild abdominal pain twenty-one. A total of eighty-eight patients completed treatment with the water soluble type of tablet, although only sixty-eight furnished the necessary number of post-treatment swabs. Of the eighty-eight patients fifty-one had no ill effects from the drug. In the remainder nausea was encountered twenty times, vomiting eleven, diarrhea nine, constipation two, dizziness one, lassitude one and mild abdominal pain eleven. Three patients suffering, respectively, from cholecystitis, car sickness and whooping cough reported vomiting. These cases are not included in the foregoing summary although the gentian violet may have been an aggravating factor in bringing on the vomiting.

All the reactions encountered may be attributed to an irritation of the gastrointestinal tract from the drug, although the symptoms of headache, dizziness and lassitude may have been due to some absorption of the drug. In a dog given 35.4 mg. of gentian violet daily for each kilogram of body weight we were able to recover from the urine on the twelfth to fourteenth days a small amount of a red substance that gave chemical reactions of a rosaniline derivative. Similar occurrences have never been noted with patients treated for pinworms. The pigment noted in the sections of the liver, spleen and kidneys of experimental animals treated with relatively large doses of the drug may have been due to absorbed dye. However, there has been no evidence to indicate that an appreciable amount of the dye is absorbed with the dosage used in the treatment for pinworms. It was observed that many of the patients having reactions had ill effects during the first several days of treatment. Many of these individuals were able to complete the treatment without further reaction even though there was no reduction in the dosage of the drug. In some cases it was necessary to withhold treatment for a day or two or to reduce the dosage until the reactions subsided. All reactions were temporary in nature.

Summary of Results of Treatment in 224 Cases of Oxyuriasis with Gentian Violet Tablets Administered Orally

Number of Completed Cases	Number of Courses of Treatment	Number of Days' Treatment in Each Course	Number of Days After Completion of Treatment Swabs Made	Number of Cases Negative on 7 Consecutive Daily Post-Treatment Swabs	Number of Cases Positive on 7 Consecutive Daily Post-Treatment Swabs	Percentage of Cases Negative
Enteric Coated Gentian Violet Tablets N. N. R.						
167*	1	10	10 to 21	97	10	91
30	2†	8	14 to 21	27	3	90
19	2†	8	42 to 48	11	8	58
Water Soluble Coated Gentian Violet Tablets						
68	2†	8	42 to 48	54	14	79
Total 224	..	..	.....	189	35	84

* Fifteen of nineteen cases in this series were negative on seven additional post-treatment swabs taken at intervals of seven to thirty-four weeks after the end of the treatment.

† Treatment was discontinued for one week between courses.

CONTRAINDICATIONS FOR GENTIAN VIOLET THERAPY

It has been our practice never to use gentian violet treatment for pinworm patients having a concomitant infestation with Ascaris lumbricoides until removal of the ascarids. Little is known concerning the action of the drug on this parasite and we feared possible intestinal obstruction from the clumping of ascarids, such as has been reported with some other anthelmintics. We have not used gentian violet for cases in which

22. Worton, A. G.; Kempf, G. F.; Burrin, P. L., and Bibbins, F. E.: A New Enteric Coating and a Laboratory Method for Its Control, J. Am. Pharm. A. **27**: 21-28 (Jan.) 1938.

23. Wright, Willard H., and Brady, Frederick J.: The Treatment of Oxyuriasis with an Improved Type of Enteric Coated Tablet, J. Parasitol. **26** (Supp.): 9-10 (Dec.) 1939.

there might be cardiac, hepatic or renal disease of an appreciable degree. Disease of the gastrointestinal tract is considered also to be a contraindication for gentian violet therapy. Abstinence from alcohol is recommended during the period of treatment. While in our experience small children have not reacted poorly to gentian violet, we have had a few cases of children under 3 years who have been unable to swallow the tablets without rupturing the coating. In these cases we have had to resort to the use of enemas for the treatment of the pinworm infestation.

THE TOXICITY OF GENTIAN VIOLET

Faust [20] noted that man and laboratory animals could tolerate daily oral doses up to 35 mg. per kilogram of body weight. The number of such doses tolerated was not stated.

We have given gentian violet in gelatin capsules orally to fifteen rabbits and found the minimum lethal dose for this short series to be 22 mg. per kilogram of body weight given daily for six days. A dog given gentian violet in enteric coated tablets in a daily dose of 35.4 mg. per kilogram of body weight survived treatment for eighteen days; another dog given 40.1 mg. of gentian violet per kilogram daily died after eighteen days of dosing. The maximum dose used for the treatment of pinworm infestation is about 3.5 mg. of gentian violet per kilogram of body weight daily for a total of sixteen days with a week's rest between two eight-day courses. This amount is about one sixth of the minimum dose causing death in rabbits given the drug in gelatin capsules and about one tenth that for dogs given the dye in enteric coated tablets.

In laboratory animals, gentian violet intoxication is manifested by anorexia, vomiting and diarrhea. With severe intoxication, these symptoms are followed by apathy and death. In the dog given 35.4 mg. of gentian violet per kilogram of body weight the erythrocyte count increased from 4,790,000 to 6,930,000 cells per cubic millimeter, the leukocyte count dropped from 23,200 to 12,450 cells and the differential count remained about the same throughout the experiment with from 65 to 74 per cent neutrophilic polymorphonuclear leukocytes. In the dog dying after eighteen days of dosing with 40.1 mg. of gentian violet per kilogram of body weight daily, the blood nonprotein nitrogen remained within normal limits until three days before death, when it began to rise rapidly.

Experimental animals given gentian violet were grossly normal at autopsy except for a moderate congestion of the intestinal mucosa and evidences of dehydration. Microscopically the liver and spleen of our experimental animals generally showed a moderate degree of congestion and in most cases the cells in the liver, spleen and kidneys showed the inclusion of a granular pigment; several animals showed a slight hydropic degeneration of the epithelium of the convoluted tubules of the outer renal cortex.[24]

COMMENT

The accompanying table presents the results of the 224 cases comprising the various series of treatments. It will be seen that there was practically no difference in the percentage of efficacy between the ten-day treatment and the sixteen-day treatment with post-treatment swabs taken between the tenth and twenty-first days after the end of treatment in the former and between the fourteenth and twenty-first days in the latter. Theoretically it might be expected that the sixteen-day treatment would result in a greater percentage of cures for the reason that the total period covered is twenty-three days, including the seven-day rest period between courses. Compared to the ten-day treatment period, this period would provide more time for the desiccation of ova in the patient's surroundings and reduce the chance of reinfestation. It is possible that a larger series of cases treated over a period of sixteen days might show an advantage in this regimen over that of the ten-day treatment.

The efficacy of the enteric coated tablets in nineteen cases in which post-treatment swabs were started on the forty-second day after the end of the treatment was only 58 per cent. We have discussed previously the possibility of reinfestation in these cases and it seems probable that some of the positive cases may represent reinfestations.

A total of fifty-four, or 79 per cent, of sixty-eight cases treated with the water soluble coated tablets were negative on post-treatment swab examinations. In all these cases, these swabs were taken between the forty-second and forty-eighth days after the end of the treatment. The efficacy of these tablets may thus be compared directly with that in the nineteen cases treated with the tablets provided with the enteric coating. The comparison would appear to be favorable to the former type of tablet. However, critical consideration of the data indicates that the chance variations in the two percentages of efficacy overlap; consequently a comparison would have to be based on a much larger series of cases in the two groups before valid conclusions could be drawn.

There is no practical method for determining the degree of infestation in pinworm cases, and the NIH swab gives no clue as to the number of worms harbored. However, impressions of the degree of the infestation are gained by the history of the frequency of migrations and the number of swabs found positive in a long series. With these impressions in mind, it has appeared to us that the persons with lighter degrees of infestation are cured more easily than those harboring large numbers of pinworms, a number that may reach into the thousands. Theoretically, heavy pinworm infestations would involve the presence of large numbers of developing larvae in the upper intestinal tract. These larvae are more difficult to remove than are adult worms and it appears that some of the failures of gentian violet to eradicate heavy pinworm infestations are due to the failure of the drug to remove the numerous developing forms.

SUMMARY

Experimental treatment with gentian violet administered in repeated oral doses has been completed on a total of 224 individuals; these patients were treated on a familial basis, each member of the family having been examined for pinworms and all infested individuals having been treated simultaneously with the view of eliminating at one time all sources of infestation within the household. A case history was obtained and a physical examination made on each individual to determine whether contraindications for the treatment were present. Pinworm diagnoses were made by means of the NIH cellophane tipped anal swab, while examinations for other helminth ova were made on stool samples by means of one of the flotation technics. The dosage of the drug for adults was two 32 mg. tablets three

24. Dr. L. L. Ashburn, Passed Assistant Surgeon, Division of Pathology, National Institute of Health, made the pathologic examination of this material.

times a day before meals and for children 10 mg. a day for each year of apparent (not chronological) age, the total daily amount of the drug for children being divided also into three doses. The efficiency of the treatment was checked by the use of seven consecutive daily NIH post-treatment swabs. The patients were treated in four series, as follows:

One series of 107 patients received enteric coated gentian violet tablets N. N. R. daily for a period of ten consecutive days. Post-treatment swabs taken in these cases from ten to twenty-one days after the completion of the treatment indicated that ninety-seven, or 91 per cent, were negative for pinworms.

Thirty patients were treated with enteric coated tablets over a period of eight days, were allowed to rest for seven days and were then treated for an additional period of eight days. Of these thirty patients twenty-seven, or 90 per cent, were negative on post-treatment swab examinations taken between the fourteenth and twenty-first days following the end of the treatment.

The third series involved the treatment of nineteen individuals with enteric coated tablets over a period of sixteen days with a week's rest between the eight-day treatment periods. Of these patients eleven, or 58 per cent, were negative on post-treatment swab examinations made from the forty-second to the forty-eighth day following the end of the treatment.

In the fourth series sixty-eight patients were treated with gentian violet tablets provided with a water soluble coating designed for disintegration in the small intestine at approximately four and one-half hours after administration. These patients were given the sixteen-day treatment with the usual seven days rest period between two eight-day courses. The tablets were given one hour before meals. Fifty-four, or 79 per cent, of the sixty-eight patients were negative for pinworm ova on seven consecutive daily post-treatment swabs taken from the forty-second to the forty-eighth day following the end of the treatment.

A certain percentage of the treated patients suffered reactions in the form of nausea, vomiting, diarrhea and abdominal pain but the reactions were of a temporary nature and quickly subsided when the dosage of the drug was reduced or the treatment was discontinued for a period of a day or two.

Contraindications for the use of gentian violet include concomitant infestations with Ascaris lumbricoides, moderate to severe cardiac, hepatic or renal disease, alcohol and diseases of the gastrointestinal tract.

The minimum lethal dose of gentian violet for rabbits was 22 mg. per kilogram of body weight daily for a period of six days. One dog tolerated a dose of 35.4 mg. per kilogram daily for eighteen days. No pathologic tissue changes have been found to account for the death of experimental animals succumbing to the administration of gentian violet.

Gentian violet was found to be eminently superior to some and superior to all the other methods of therapy tested under similar conditions and checked by the same technic. Because of its relative cheapness, its ease of administration and its relatively high degree of efficacy, the drug is apparently of greater value than are other known drugs for the treatment of pinworm infestation in families in which many individuals may be infested and in which simultaneous treatment of all infested individuals appears to be necessary for the control of the condition.

Clinical Notes, Suggestions and New Instruments

A GREAT CRAVING FOR SALT BY A CHILD WITH CORTICO-ADRENAL INSUFFICIENCY

LAWSON WILKINS, M.D., AND CURT P. RICHTER, PH.D.
BALTIMORE

Special food cravings or aversions have received only passing interest in modern medicine and have been almost entirely neglected in modern nutrition. This is due to the prevalent view that appetite cannot be trusted as a guide to the proper selection of foods. Results of experiments on rats using the self-selection technic indicate, on the contrary, that a very close relationship exists between appetite and nutritional needs of minerals and vitamins, as well as of fats, carbohydrates and proteins. In human beings there are only a few instances which throw light on the relationship between appetite and dietary needs. Davis[1] reported that when very young normal children were given free access to a large number of natural foods they made selections which resulted in normal growth and development. She also reported that a child with vitamin A deficiency took large amounts of cod liver oil and thereby caused the deficiency symptoms to disappear.

During the past year we had occasion to make in this hospital a clinical observation which demonstrates in a very striking way the close relationship between appetite and nutritional needs. The endocrinologic aspects and the full medical history of this case have been reported in detail by Wilkins, Fleischmann and Howard.[2] The following data were taken from their history:

REPORT OF CASE

D. W., a boy aged 3½ years, admitted to the Harriett Lane Home for Children, showed a marked development of his secondary sex organs. His penis and testes were as large as those of a 12 year old boy. The prostate was fairly well developed; spermatogenesis was absent. Over the pubis there was a rather abundant growth of long dark hair. The voice was deep and the laryngeal cartilage was as prominent as that of a full grown man.

The skin on his scalp and body had a slightly brownish hue; the alveoli of the nipples were pigmented and the gums over the upper incisors showed a patch of brownish pigmentation.

His blood had a low sodium and a high nonprotein nitrogen content. Other physical observations were negative.

In the hospital the boy did not seem to be especially ill. He behaved like a very defective child, growling and snarling in an incoherent manner when attempts were made to examine him. He was offered the regular ward diet. His appetite was poor and he ate but little of the food. When feedings were forced, he vomited on several occasions. Seven days after admission he suddenly died.

Postmortem examination revealed that both adrenals were large. There was hyperplasia of the androgenic or prenatal zone cells, with marked diminution of the normal cortical cells. The testes were composed of similar cells crowding out the seminiferous tubules. Otherwise no pathologic changes were found. The precocious development of the secondary male sex characteristics was thought to be due to the embryonic hyperplasia of the androgenic zone of the adrenal. It appeared that death from adrenal insufficiency resulted from destruction of the electrolyte-controlling elements of the adrenal cortex.

One of the interesting features of this case was the presence of a great craving for salt. After his death it was learned that from the age of 12 months the child had eaten salt in large quantities. In addition, he had been given saline enemas

These observations form part of a study of the "Influence of Hormones on Appetite," supported by the Committee on Research in Endocrinology of the National Research Council.

From the Harriett Lane Home for Children and the Psychobiological Laboratory, Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital.

1. Davis, Clara M.: Self Selection of Diet by Newly Weaned Infants, Am. J. Dis. Child. **36**: 651 (Oct.) 1928.

2. Wilkins, Lawson; Fleischmann, W., and Howard, J. E.: Endocrinology, to be published.

every second or third day because of constipation. Subsequently a full account was obtained from the parents concerning the onset and development of this craving. The following letter, which is one of the most extraordinary documents on behavior on record, was written by the parents in response to a few questions regarding their child's special appetites:

"Dear Dr. ——:

"Since receiving your letter it has been on my mind constantly to remember as nearly as possible the correct answers to all of your questions. We want to thank you for your very nice letter and are glad to help in any way we can.

"Some of the things I am writing you I know are not direct answers to your questions, but indirectly I feel that they may be of some help to you and perhaps explain how we had studied D—— and his peculiarities. Of course, in the beginning we knew that he was very sick, but did not know his true condition or what to expect.

"We had such a hard time trying to find milk to agree with him that I remembered exactly when each kind was changed; but when he first started eating salt I didn't think it was so important until later when he started craving it.

"With his feeding problems we only gave one new food at a time and took particular notice of the reaction it had on him. At six months we still didn't have any one milk to agree with him for any length of time except mother's milk. At this time Dr. —— told us to start giving him strained vegetable soup and beef broth. He liked it, but as soon as it touched his tongue he would gag and bring up everything he had in his stomach unless I made it very thin with the beef broth. About a month later we started giving him strained vegetables; but, no matter what it was, he would bring it all up immediately unless it was very thin, practically liquid. At this time the doctor told us to give him crackers and zwieback; but as soon as he got any crumbs or little pieces of food on his tongue he would gag and bring up everything else. I would keep trying him from time to time thinking that perhaps the next time he would do better.

"When he was around a year old he started licking all the salt off the crackers and always asked for more. He didn't say any words at this time, but he had a certain sound for everything and a way of letting us know what he wanted. This was the first we had noticed his wanting the crackers or salt. Finally he started chewing the crackers; but he only chewed them until he got the salt off, then he would spit them out. He did the same with bacon, but he didn't swallow the pieces. When he was about sixteen months old, crackers were the first food he chewed and swallowed; but it was quite a while after that before he would chew up and eat a whole cracker. He would usually just make a mess of them eating the salt off.

"In an effort to try to find a food that he would like well enough to chew up and swallow, we gave him a taste of practically everything. So, one evening during supper, when he was about eighteen months old, we used some salt out of the shaker on some food. He wanted some, too. We gave him just a few grains to taste, thinking he wouldn't like it; but he ate it and asked for more. This was the beginning of his showing that he really craved salt, because this one time was all it took for him to learn what was in the shaker. For a few days after that, when I would feed him his dinner alone at noon, he would keep crying for something that wasn't on the table and always pointed to the cupboard. I didn't think of the salt, so I held him up in front of the cupboard to see what he wanted. He picked out the salt at once; and in order to see what he would do with it, I let him have it. He poured some out and ate it by dipping his finger in it. After this he wouldn't eat any food without having the salt, too. I would purposely let it off the table and even hide it from him until I could ask the doctor about it. For it seemed to us like he ate a terrible lot of plain salt. But when I asked Dr. —— about it, he said, 'Let him have it. It won't hurt him.' So we gave it to him and never tried to stop it altogether. After we gave it to him all the time he usually didn't ask for it with his dinner; but he wouldn't eat his breakfast or supper without it. He really cried for it and acted like he had to have it. Foods that he ordinarily wouldn't touch he would eat all right if I added more salt to them. He would take the shaker and pour some out on his plate and eat it with his finger, but we always tried to keep him from getting what we thought would be too much for him. He never did care much for zwieback, toast or bread or for cooked potatoes, but he did like raw potatoes, raw carrots, celery, tomatoes, lettuce and different other foods if he could dip them in salt. If I didn't give it to him, he always asked for it. At eighteen months he was just starting to say a few words, and salt was among the first ones. We had found that practically everything he liked real well was salty, such as crackers, pretzels, potato chips, olives, pickles, fresh fish, salt mackerel, crisp bacon and most foods and vegetables if I added more salt. We never tried to force him to eat a food; I always tried to prepare the same food in a way that he would like it. Spinach and green beans were his favorite vegetables. By letting him taste different foods he learned to like quite a variety, although he was three years old before he really ate a good meal by chewing it and swallowing it. In the meantime, I kept feeding him strained foods with the beef broth. . . . As he grew older and ate better, he very seldom brought up his meals any more. But he always wanted a lot of vegetable juice on his foods before he would eat them. If I didn't give it to him, he would ask for it and would eat everything good; but he wanted the salt too. By the time he was three years, I could reason with him and make him understand when he had enough of anything. At the time we had no idea as to the amount of salt he ate, or what the result would be if he didn't have it; but we have measured it now and would say that he ate between three quarters to one teaspoon of plain table salt a day *in addition* to all his foods being saltier than ours. If he ate a food without it, I let him go; but if he wanted more salt in it, I added a little more. Many times I tried to make him think I added it, but he always knew the difference with the first taste. Some days he may have had a little more or less than the amount stated, which is, as we would judge, the average.

"He would not eat anything sweet, though. Mostly everything with much sugar in it he would either bring back up or *just wouldn't eat it*. He would not eat cereal with sugar and milk on it. I would always strain his cereal into his glass of milk and let him drink it. Wheaties, or any small amount of dry cereal I tried to give him, he would not eat with sugar and milk but wanted it dry with salt sprinkled on. He *did not* like candy, cake, custards, puddings, etc. He did eat a little ice cream or jello.

"He was a very observing baby and, even in his sickly condition, started noticing pictures in books when he was six months old. He always liked books, and we would read to him quite a lot. When he was about two years old he began reading the pictures himself. He would get out one book after another and never seemed to grow tired of reading them. Many times he surprised us by knowing and recognizing things in the pictures we hadn't even noticed. And by the time he was three and a half he knew a few words by sight. When he was two and a half he loved to hunt for the attractive pictures of the good foods in the magazines. He learned to know what all the foods were and made believe he ate them. It was surprising to us to see how this improved his appetite at meal time, for it was at this time that he started chewing his foods better and acted like he really enjoyed them. Another thing that helped him learn to eat was because he became interested in cooking. Many times he would play for an hour or more making believe he was cooking his Daddy's supper and imagining all kinds of foods he was cooking.

"There was no other one food that he seemed to crave like salt, except water. Many people seemed to think this was because he ate so much salt, but he liked lots of water to drink from the time he was four months old. At six months, if we showed him a bottle of water and one of milk, he would take the water in preference to the milk *every time*. And in studying him, we found that by giving him lots of water he would be able to belch easier and so keep his milk down better. He learned to know himself that it helped him. As soon as he knew what the word 'water' meant, he would cry for it every time he heard the word mentioned. And when he saw the river or the ocean, he always thought he had to have some to drink until we were finally able to explain to him that it wasn't drinking water. But up until the time we took him up there he still wanted water every time he saw anybody else drink it. He always asked for it many times between meals; and if there was water on the table at meal time he would rather drink it than eat his meal. And if we let him drink and eat too much without making him stop to belch in between, his food would come back up almost every time. Also, if we let him cry much, he could not keep anything in his stomach.

"At home he acted and played the same as any perfectly normal child. But the doctor had told us not to take him anywhere among people because of contracting contagious diseases, which he didn't think D—— could pull through. The result was that he was afraid of strangers; and when we brought him up there it was the first time that he was among

complete strangers and strange surroundings. We had never been away from him ourselves before. Either my husband or I were always with him to take care of him.

"I hope that I have answered all of your questions satisfactorily and also that at least part of what I have written will be of some help to you. In order to remember the answers as nearly correct as possible, it was necessary for me to recall D——'s whole life. If there is anything at all that I have omitted don't hesitate to let us know. We will be glad to answer it if we can. As for the different kinds of milks we gave him and the age when each one was changed, also his growth and development, I had those recorded on the backs of the pictures I sent you sometime after we returned from up there.

"Hoping we have been able to help you in your studies and perhaps some children in the future, we are,

"Yours very truly,

"MR. AND MRS. ——."

COMMENT

The full significance of the craving for salt by this child can be obtained from a review of our knowledge of salt craving by adrenalectomized animals.

It is well known that in rats kept on the ordinary stock diets symptoms of insufficiency develop and the rats die within ten to fifteen days after adrenalectomy. Death occurs largely because of the excessive loss of sodium chloride in the urine and the resulting changes in the internal osmotic conditions.[3] It is known that the survival time can be increased and the mortality rate decreased by increasing the salt content of the food until it approximates the amount of salt lost in the urine. Further, it was shown that when adrenalectomized rats have access to salt in a container separate from the food they will ingest large amounts of salt and, as a consequence, keep themselves alive and free from symptoms of insufficiency.[4] Some of the rats ingested from fifteen to twenty times as much of a 3 per cent salt solution thirty days after adrenalectomy as they had in the last ten day preoperative period. That the increased salt appetite depended on the loss of the adrenals was demonstrated by the observation that adrenals successfully implanted to the anterior chamber of the eyes caused the craving to disappear entirely.

This increased craving for salt manifested by adrenalectomized rats is not an isolated instance of a mineral or food craving which is closely related to dietary needs. We[5] have reported that parathyroidectomized rats have an increased appetite for calcium, magnesium and strontium salts, which are known to decrease parathyroid tetany, and that they have a decreased appetite for phosphorus. We found also that pregnant and lactating rats given free access to a large selection of minerals, vitamins, purified (or nearly purified) fats, proteins and carbohydrates, all in separate containers, make selections in accordance with their needs. They increased their intake of calcium, phosphorus, protein and fat.

There can be little doubt, then, that with his increased salt craving the 3½ year old boy with deficient adrenal cortical tissue made an effort to maintain a normal internal salt balance. Apparently he started as early as eleven months after birth. During the two and one half years previous to his entrance to the hospital he must have kept himself alive by eating large amounts of salt. In the hospital he was not given free access to salt but was given the regular ward diet, which contains the normal amount of salt and, as a result, died suddenly.

The basis for special cravings has not yet been established. We do not know whether the adrenalectomized rats eat large amounts of salt because the ingestion of salt makes them feel better or because their taste for salt has changed—in other words, that in their salt deficient state they become chemotropically attracted to salt. In favor of the latter view is the observation that adrenalectomized rats have a greatly decreased threshold for salt. They distinguish distilled water from salt solution in a 1:33,000 concentration, while normal rats do not make this distinction until the salt solution reaches a concentration of 1:2,000.[6] Such minimal amounts of salt as are received in drinking a few cubic centimeters of a 1:33,000 solution could not possibly have any physiologic effect. This boy also showed a positive reaction to salt when he first tasted it in pure form in very small quantities on the top of soda crackers. It is not readily conceivable that such a small amount of salt could have had any detectable effect on his deficiency condition.

3. Loeb, R. F.: Proc. Soc. Exper. Biol. & Med. **30**: 808 (March) 1933. Harrop, G. A.; Soffer, L. J.; Ellsworth, Read, and Trescher, J. H.: J. Exper. Med. **58**: 17 (July) 1933. Rubin, M. I., and Krick, E. T.: Proc. Soc. Exper. Biol. & Med. **31**: 228 (Nov.) 1933.

4. Richter, C. P.: Am. J. Physiol. **115**: 155 (March) 1936.

5. Richter, C. P., and Eckert, J. F.: Endocrinology **21**: 50 (Jan.) 1937. Richter, C. P., and Eckert, J. F.: Am. J. M. Sc. **198**: 9 (July) 1939.

SUMMARY

A boy aged 3½ years with deficient adrenal cortical tissue, manifesting various symptoms of adrenal insufficiency, had a marked craving for salt. On the basis of observations made on adrenalectomized rats, it would seem that this boy, by increasing his salt intake, kept himself alive for at least two and one half years.

A NEW TUBE FOR USE IN THE TREATMENT OF EMPYEMA BY OPEN DRAINAGE

LEON J. LEAHY, M.D., BUFFALO

It appears to be generally accepted that cases of empyema must be individualized and the proper treatment instituted to meet the conditions present. The chief factors influencing this are the age of the patient, the character of the exudate and the presence of complications. In most large series it is noted that the vast majority of cases require open drainage, such other methods as aspiration and closed drainage being reserved for the instances in which it is felt that the open method is either unsafe or not warranted. At times one of these procedures is used as a preliminary measure before establishing open drainage.

In instituting and maintaining open drainage I have encountered several difficulties which, although of a minor nature, could easily contribute to chronicity or recurrence if they were not recognized early or handled properly. The first of these has to do with the prevention of the tube from either slipping into the pleural cavity or coming out with the dressing. Sutures through the tube are satisfactory only until such time as they slough through the skin. A safety pin inserted through the tube and held to the chest wall with adhesive tape is an acceptable makeshift. However, the strips become readily loosened by the moisture from drainage and irrigations, thus allowing the tube to slip out of the pleural cavity unless care is exercised. As the inner end of the sinus closes very readily after the end of the tube has come out of the pleural cavity, reintroduction of the tube is often unsatisfactory. The next problem has to do with the inner end of the tube; it can easily be allowed to project into the pleural cavity for a distance of 1 or 2 inches, and with the use of modern gum rubber tubing it is difficult to recognize this fact even on the x-ray film without the injection of an opaque substance. I feel that if the end of the tube is not at the level of the parietal pleura the portion of the pleural cavity about the drainage tube is not kept emptied. This is in spite of secondary openings made in the sides of the tube, as these seem to become plugged with fibrin or granulations. There is the added factor of increased morbidity because the lung in reexpanding comes in contact with the end of the tube, and I feel that the speed of reexpansion

Fig. 1.—Tube and flanges bent forward for introduction into the pleural cavity.

6. Richter, C. P.: Endocrinology **24**: 367 (March) 1939.

From the Department of Surgery, University of Buffalo School of Medicine.

The instrument is made by the George P. Pilling & Son Company, Philadelphia.

is slowed up from this point onward and a small residual pocket is left which is not obliterated until the tube is entirely withdrawn from the pleural cavity. The possibility of pressure necrosis on the surface of the lung from contact with the tube with resultant bronchopleural fistula or bleeding is likewise present. Finally, to accomplish irrigation of the empyemic cavity it is necessary either to introduce a second tube or to irrigate through the large tube. The former method is rather inconvenient and the latter method often serves to wash large plugs of fibrin back into the pleural cavity.

To overcome the difficulties mentioned, I have designed a tube for open drainage which has been entirely satisfactory in my hands. This tube is of sufficient caliber to provide

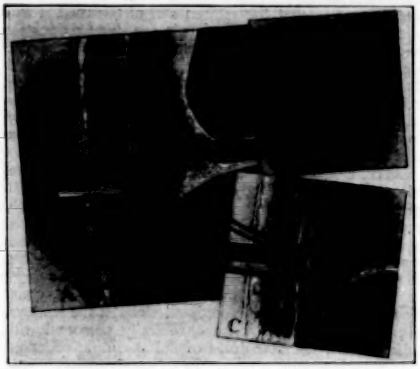

Fig. 2.—*A*, cross section showing tube in position with relationship of the inner end to the parietal pleura. *B*, appearance of the outer end with pin in place and wound closed. *C*, cross section showing tube in position following reexpansion of the lung.

adequate drainage for even thick fibrin and has a small tube incorporated for secondary irrigations. There are two flexible rubber flanges on the inner end, which prevent the tube from slipping out of the pleural cavity. In addition they keep the point of drainage at the level of the parietal pleura, thereby allowing the lung to reexpand to the chest wall without striking the tube and also obviating the danger of pressure necrosis on the pulmonary surface. The safety pin is put through the tube at the skin level and in this manner the tube is made self retaining and consequently cannot slip into or out of the pleural cavity. No adhesive tape is necessary, and the only sutures used are interrupted sutures, employed to approximate the edges of the wound. Owing to the variation in thickness of the chest wall, depending on the site of operation and the build of individual, the safety pin has proved the most satisfactory handling of this problem. This tube is easily introduced, as the flanges are flexible and the gussets cut in the sides allow them to be bent forward. These also permit easy withdrawal following reexpansion of the lung. There is no necessity for removal of the tube until the empyemic cavity is obliterated.

SUMMARY

A new tube for open drainage in empyema is presented which has the following advantages:

1. It is easily introduced and withdrawn.
2. It is self retaining.
3. It can be reused many times.
4. It has adequate provision for secondary irrigations without the use of another tube.
5. The inner end of the tube is flush with the chest wall, therefore allowing more satisfactory drainage of the pleural cavity and complete reexpansion of the lung and obviating the danger of pressure necrosis

40 West North Street.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

SCANLAN-MORRIS OXYGEN REGULATORS ACCEPTABLE

Distributor: The Scanlan-Morris Company, Madison, Wis.

Manufacturer: The Bastian-Blessing Company, Chicago.

Designed to meter the flow of oxygen, the Scanlan-Morris Oxygen Regulators are applicable to anesthesia apparatus, oxygen tents, nasal catheters and any similar oxygen therapy chambers. The numbers of the models distributed by Scanlan-Morris are A1473, A1474 and A1475, and these are designated by Bastian-Blessing as G-6121, G-6161 and T-6162 respectively.

The model A1473 is a single stage regulator provided in different sizes and with various types of flow-indicating and control units. The larger sizes provide greater durability and accuracy of control. The gas may enter the inlet of the regulator at varying pressures up to 2,000 pounds. The gas is released at the outlet by turning a screw until the gage connected to the expansion chamber of the regulator registers the desired flow. The valve on the outlet is so regulated by a spring and diaphragm that any desired volume of gas at a fixed pressure can be obtained. Vent holes are provided to release pressure in the event of the failure of the diaphragm. The regulator bonnets are also built with a shearing edge that cuts the diaphragm and allows the gas to escape before any dangerous excess pressure can build up.

The model A1474 is a double stage regulator equipped with a dial type, Bourdon tube, liter-flow indicating gage, which is calibrated in liters per minute from 0 to 15 against a fixed orifice of discharge. A simple discharge outlet permits the discharge only of the volume of gas indicated on the flow meter.

The model A1475 is also a double stage regulator but is equipped with a Thorpe tube flow indicator, consisting of a vertical tube of resinous plastic material highly resistant to fracture. A stainless steel flow ball indicates the relative volume of oxygen discharge against a calibrated plate, which is fixed to the reinforcing sleeve around the Thorpe tube. To facilitate the adjustment for various volumes of flow, the inlet of the Thorpe tube is provided with a restrictive orifice which acts as a choke. This device is also equipped with a spring valve by-pass, permitting a direct discharge of oxygen from the regulator to the outlet without passing through the flow indicator. This is to provide oxygen more rapidly in cases of emergency.

Both of the two-stage models are available with and without by-pass valves. In both models the variation in flow is accomplished directly by varying the pressure against restricting orifices. The discharge pressure beyond the orifices in all cases is nominally at atmospheric pressure.

Scanlan-Morris Oxygen Regulators, Model 1475.

When the gas pressure is regulated in two stages, the first stage pressure setting is fixed at the factory to deliver gas at a pressure of 150 pounds to the second stage. This setting allows an adjustable delivery range from 0 to 75 pounds from the outlet of the unit. By entirely releasing or removing the adjusting screw at the first stage, one reduces the flow to the second stage from 150 to 75 pounds. This permits a greater sensitivity to the new 0 to 55 pounds delivery range provided by the second stage adjustment. Positively connected seat and diaphragm assemblies are employed in a nozzle type first stage and a stem type second stage, in which neither stage depends on springs to shut off the gas. The claim is made that a positively constant delivery pressure is maintained as the cylinder pressure diminishes from 2,000 down to about 45 pounds, permitting the use of approximately 98 per cent of the contained gas in a cylinder without readjusting the flow rate.

A filtering device is incorporated in the inlet, consisting of two cylindric sections of monel mesh screen between which is an inert filtering compound. This is to eliminate destructive wear on the seat by preventing the entrance of finely divided particles of dirt. Located between the first and second stages is a spring-loaded safety relief valve, which is set to function at 300 pounds pressure to protect the inlet of the second stage against possible excess pressure coming from the first stage in the event that the first stage did not close off at 150 pounds pressure. The firm states further that, if anything should happen to the safety device, the first stage is so built that it can withstand 2,000 pounds pressure. In order to substantiate the efficiency of the regulator in maintaining a constant delivery pressure with a lowering of the cylinder pressure, the firm submitted comparative curves for this regulator and six other competitive regulators. One group of tests was made with the delivery pressure set at 5 pounds and a second group with the delivery set at approximately 1¼ pounds (the weight of a 50 inch column of water). In all cases the regulator under consideration gave a straight-line curve down to about the last 50 pounds pressure in the cylinder.

The regulators were submitted for a Council investigation, from which it was determined that they are well constructed and satisfactory. The flow meter is sufficiently accurate for clinical use at the indicated liter levels. It appeared to hold a given indicated rate of flow over long periods of time.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Scanlan-Morris Oxygen Regulators for inclusion on the Council's list of accepted devices.

Council on Pharmacy and Chemistry

PRELIMINARY REPORT OF THE COUNCIL

SULFATHIAZOLE AND SULFAMETHYLTHIAZOLE

FOLLOWING THE INTRODUCTION OF SULFAPYRIDINE IT WAS TO BE EXPECTED THAT RESEARCH LABORATORIES WOULD PREPARE OTHER DERIVATIVES OF SULFANILAMIDE FOR PURPOSES OF INVESTIGATION. RECENTLY THERE HAVE BEEN REPORTS THAT TWO DERIVATIVES IN PARTICULAR, SULFATHIAZOLE (2(PARA-AMINO-BENZENE-SULFONAMIDO) THIAZOLE) AND SULFAMETHYLTHIAZOLE (2(PARA-AMINO-BENZENE-SULFONAMIDO) 4-METHYLTHIAZOLE) GIVE SOME PROMISE OF THERAPEUTIC MERIT. THE COUNCIL HAS NOT GIVEN CONSIDERATION TO THE ACCEPTABILITY OF THE NAMES SULFATHIAZOLE AND SULFAMETHYLTHIAZOLE. THE MEDICAL PROFESSION HAS SUCH INTEREST IN SULFANILAMIDE AND ITS DERIVATIVES THAT DR. PERRIN H. LONG WAS ASKED IF HE WOULD PREPARE A PRELIMINARY REPORT ON THESE TWO SUBSTANCES. THE COUNCIL CONCURS WITH HIS CONCLUSIONS AND EXPRESSES ITS APPRECIATION OF DR. LONG'S AID.

THE TWO PREPARATIONS HAVE NOT BEEN LICENSED BY THE FOOD AND DRUG ADMINISTRATION FOR SALE IN INTERSTATE COMMERCE (AS NEW DRUGS). THIS GIVES OPPORTUNITY FOR THE MEDICAL PROFESSION TO BE INFORMED ABOUT THE DRUGS BEFORE THEY ARE EXPLOITED. NO FIRM HAS SUBMITTED THESE DRUGS FOR CONSIDERATION BY THE COUNCIL. THE COUNCIL ADOPTED DR. LONG'S REPORT AND HAS AUTHORIZED ITS PUBLICATION AS A PRELIMINARY REPORT OF THE COUNCIL.

PAUL NICHOLAS LEECH, Secretary.

THIAZOLE DERIVATIVES OF SULFANILAMIDE

SULFATHIAZOLE AND SULFAMETHYLTHIAZOLE

PERRIN H. LONG, M.D.

BALTIMORE

Recently, Fosbinder and Walter [1] have described the preparation of certain sulfanilamide derivatives of heterocyclic amines. Among these compounds were described sulfanilamide derivatives of the thiazole series, namely 2 - para-nitro - benzenesulfonamido - 4-methylthiazole, 2-N⁴-acetylsulfanilamido-4-methylthiazole, 2-N⁴-acetylsulfanilamidothiazole, 2-sulfanilamido-4-methylthiazole and 2-sulfanilamidothiazole. Similar compounds have been synthesized by Lott and Bergeim.[2] Two of these compounds, sulfathiazole (2(para-amino-benzene-sulfonamido) thiazole) and sulfamethylthiazole (2(para-amino-benzene-sulfonamido) 4-methylthiazole) have been distributed for experimental use and clinical investigation. The names have not yet been considered by the Council on Pharmacy and Chemistry.

It has been reported [3] that the acute toxicity of sulfathiazole (when administered as the sodium salt by the parenteral route) is definitely less than that of the corresponding sodium salt of sulfapyridine when administered by the same route. The experience with this compound in our division confirms this observation, and we have noted that the sodium salt of the methyl and phenyl derivatives of sulfathiazole are about as acutely toxic for mice as is the sodium salt of sulfapyridine. Hence, from this point of view, it can be definitely said that, in acute toxicity experiments in mice, sulfathiazole is less toxic than its methyl derivative, phenyl derivative and sulfapyridine. Van Dyke and his co-workers [3] found that the chronic toxicity of sulfathiazole in mice was definitely greater than that of sulfapyridine when these compounds were fed in the diets in concentrations of 2 per cent. Sulfapyridine, however, appeared to be more toxic for growing rats than was sulfathiazole and in monkeys large doses of sulfapyridine produced unilateral or bilateral hydro-ureter and hydronephrosis together with hematuria and albuminuria in six of seven monkeys, while but one in seven monkeys given large doses of sulfathiazole showed like changes. Rake and his associates [4] noted microscopic lesions in the kidneys, livers and spleens of mice chronically poisoned with sulfathiazole. Similar doses of sulfapyridine produced only hepatic lesions in mice. In rats and monkeys, little evidence of injury was found after intensive sulfathiazole therapy. It would seem from these studies that the chronic toxicity of sulfathiazole for mice is definitely greater than is that of sulfapyridine, while in rats and monkeys sulfapyridine is the more toxic compound. Further studies [5] revealed that in mice sulfathiazole disappears from the blood more rapidly than does sulfapyridine, and in rats and monkeys it was noted that sulfathiazole was excreted more rapidly than was sulfapyridine and that the proportion of conjugated sulfathiazole excreted in the urine of these animals was much less than was the case with sulfapyridine. We have noted also that sulfathiazole disappears rapidly from the blood of mice.

The therapeutic effect of these compounds on experimental pneumococcic, meningococcic, hemolytic streptococcic and lymphogranuloma venereum infections in mice has been tested by McKee and her associates.[5] It has been shown, as a result of these studies that, when sulfathiazole is administered as 1 per cent of the diet, its therapeutic effects are of the same order of those of sulfapyridine in the control of experimental pneumococcic infections in mice. If 0.5 per cent of the drugs were used in the diets, sulfapyridine was consistently slightly more effective than sulfathiazole. The results obtained in experimental streptococcic, meningococcic and lymphogranuloma venereum infections with sulfathiazole therapy were of the same order

From the Biological Division, Johns Hopkins University School of Medicine.

1. Fosbinder, R. J., and Walter, L. A.: Sulfanilamido Derivatives of Heterocyclic Amines, J. Am. Chem. Soc. **61**: 2032 (Aug.) 1939.

2. Lott, W. A., and Bergeim, F. H.: Communications to the Editor: 2-(p-Aminobenzenesulfonamido)-Thiazole: A New Chemotherapeutic Agent, J. Am. Chem. Soc., December 1939, p. 3593.

3. van Dyke, H. B.; Greep, R. O.; Rake, Geoffrey, and McKee, Clara M.: Observations on the Toxicology of Sulfathiazole and Sulfapyridine, Proc. Soc. Exper. Biol. & Med. **42**: 410 (Nov.) 1939.

4. Rake, Geoffrey; van Dyke, H. B.; Corwin, W. C.; McKee, Clara M., and Greep, R. O.: J. Bact. **39**: 45 (Jan.) 1940.

5. McKee, Clara M.; Rake, G.; Greep, R. O., and van Dyke, H. B.: Therapeutic Effect of Sulfathiazol and Sulfapyridine, Proc. Soc. Exper. Biol. & Med. **42**: 417 (Nov.) 1939.

as were observed when sulfapyridine was used, but, as small numbers of mice were used and practically all of those treated survived, no conclusions as to the effect of the drug can be drawn. Cooper and his co-workers [6] have reported that sulfathiazole and sulfamethylthiazole are less effective than sulfapyridine in the control of experimental type II pneumococcic and streptococcic infections in mice. Here again too few mice were used to make the reported observations statistically significant. Our own experiments in experimental hemolytic streptococcic and pneumococcic infections in mice lead me to believe that sulfathiazole is somewhat less effective than sulfapyridine as a therapeutic agent when administered in suspension by the peroral route. However, when the drug is administered in a 1 per cent concentration in the diet of the infected mice it seems to be equal to sulfapyridine in its therapeutic efficiency in these infections. In experimental staphylococcic infections in mice sulfathiazole has proved somewhat superior to sulfapyridine. The differences noted in the therapeutic result obtained when the two drugs are administered in suspension by the oral route (as compared with giving it in the food) in experimental infections in mice may be accounted for by the more rapid disappearance of sulfathiazole from the blood of the treated mice.

Recently we have carried out studies on the absorption, distribution and excretion of sulfathiazole in man. These studies indicate that the drug is more readily absorbed from the gastrointestinal tract than is sulfapyridine and that in this respect it approaches sulfanilamide. In the blood the ratio of the free and conjugated fractions of the drug also resembles that of sulfanilamide, differing again in this respect from sulfapyridine. Sulfathiazole is excreted much more rapidly than is sulfapyridine, if renal function is normal. In the urine much less sulfathiazole exists in the acetylated or conjugated form than is the case with sulfapyridine. Sulfathiazole seems to be distributed in exudates and transudates in about the same ratio as has been noted previously for sulfanilamide.

It is too early to pronounce on the comparative clinical therapeutic effects of sulfathiazole and sulfapyridine. However, our experience to date leads us to believe that it is about as effective as sulfapyridine in pneumococcic pneumonia in human beings and at least as effective as sulfapyridine, if not more so, in staphylococcic infections in man.

We have noted in the course of clinical experiments with sulfathiazole that there seemed to be definitely less nausea and vomiting produced by this drug than we should have expected from sulfapyridine. Drug fever and drug rashes have been quite common and, in addition, we have noted three instances of a rather marked congestion of the conjunctivas and scleras in association with an erythematous papular and nodular eruption which was generalized over the extremities and face. The eruption resembled that of erythema nodosum. In one case an injection of the sclera of one eye alone, without an eruption, was observed. These ocular manifestations of sulfathiazole toxicity may be preceded by burning and smarting of the eyes. In at least one case the eruption and conjunctivas seemed to be associated with photosensitization.

Sulfathiazole does not seem to cause a fall in the carbon dioxide combining power of the plasma. Mild hematuria has been noted in several cases. In one case anuria of forty-eight hours' duration with azotemia but without hypertension or changes in the retina developed shortly after treatment with sulfathiazole had been discontinued. In view of the toxic reactions just described, it is to be expected that sulfathiazole will produce essentially the same clinical toxic manifestations previously described as occurring in the course of treatment with sulfanilamide or sulfapyridine.

Not enough is known as yet to set up standards of dosage. For adult patients ill with pneumococcic pneumonia it has been my custom to prescribe initial doses of 4 Gm. of sulfathiazole, this to be followed at four hour intervals by doses of 1 Gm. of the drug. Using this schedule we have noticed that after the first twenty-four hours of medication the concentrations of sulfathiazole in the blood are frequently much lower than would be expected if sulfapyridine had been administered, and in certain instances it has been difficult to maintain adequate concentrations of the drug in the blood of patients, despite increases in the amount of drug prescribed. This we attribute to the rapid absorption and excretion of the drug. In several cases a relapse of the pneumonia has been noted in association with these low concentrations of sulfathiazole.

There is little available published data concerning the experimental use of sulfamethylthiazole. Herrell and Brown [7] have stated "It appears that sulfamethylthiazole is a rather efficient drug in infections caused by pneumococcic and especially staphylococcic organisms."

The evaluation of these new chemotherapeutic compounds will necessitate extensive experimental and clinical investigations in order to determine their efficiency in the control of infections and their clinical toxic manifestations. Until the time when such data are in hand, it is to be hoped that enthusiasms do not outrun common sense.

6. Cooper, F. B.; Gross, Paul, and Lewis, Marion: Chemotherapeutic Evaluation of Sulfanilamide Derivatives of Heterocyclic Amines, Proc. Soc. Exper. Biol. & Med. 42:421 (Nov.) 1939.

7. Herrell, W. E., and Brown, A. E.: The Clinical Use of Sulfamethylthiazol in Infections Caused by Staphylococcus Aureus, Proc. Staff Meet., Mayo Clin. 14:753 (Nov. 29) 1939.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

FRANKLIN C. BING, Secretary.

PREPARATIONS USED IN THE FEEDING OF INFANTS (*See* Accepted Foods, 1939, p. 156).

Beech-Nut Packing Company, Canajoharie, N. Y.

BEECH-NUT BRAND CHOPPED LIVER AND BEEF SOUP WITH VEGETABLES, BARLEY AND RICE, composition reported by manufacturer to be the same as that of Beech-Nut Brand Strained Liver and Beef Soup with Vegetables, Barley and Rice.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED PEAS.

Analysis (submitted by manufacturer).—Moisture 85.4%, total solids 14.6%, ash 1.1%, sodium chloride 0.4%, fat (ether extract) 0.1%, protein (N × 6.25) 3.5%, crude fiber 1.8%, carbohydrate other than crude fiber (by difference) 8.1%, calcium (Ca) 11.0 mg. per 100 Gm., phosphorus (P) 32.8 mg. per 100 Gm., iron (Fe) 2.3 mg. per 100 Gm., copper (Cu) 0.229 mg. per 100 Gm.

Calories.—0.49 per gram; 13.9 per ounce.

Vitamins.—Protocols of biologic assay (1939) show that the product contains 4.0 U. S. P. units of vitamin A per gram, 114 per ounce; 0.34 international units of vitamin B_1 per gram, 9.7 per ounce; 0.20 Sherman-Bourquin units of vitamin G (riboflavin) per gram, 5.7 per ounce; and according to a report of chemical titration (1939) 0.51 international unit of vitamin C per gram, 16.8 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 9, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

DESICCATED BILE

The proper absorption of vitamin K, which takes place only in the presence of an adequate amount of bile in the intestine, is apparently a major factor in the maintenance of a normal level of prothrombin in the blood. Of especial interest in this connection is the suggestion that the clotting deficiency in obstructive jaundice is directly related to improper absorption of vitamin K as the result of lack of necessary biliary constituents in the intestine.[1] This view is in accord with the earlier observation that the hemorrhagic tendency in jaundice may be caused by a diminution of prothrombin.[2] The therapeutic use of desiccated bile in the treatment of obstructive jaundice has been suggested.[3] When the administration of bile to a patient is indicated, the advantages of dried bile over fresh bile are apparent, since the latter has a tendency to deteriorate and is unpleasant to administer. If desiccated bile is used as a substitute for fresh bile, however, it is important to know whether or not the drying process in any way affects the chemical and physical properties of the product.

A recent report by Johnston and his associates[4] offers the comparative composition of desiccated and normal hog gallbladder bile. The composition of dried bile, prepared from fresh hog bile by evaporating it to dryness under a high vacuum and at a low temperature, is compared to the chemical makeup of the same bile before dessication. The dry powder prepared from bile dissolves readily in water to yield a solution closely resembling the original bile. Except for some loss of carbon dioxide, the inorganic constituents are not appreciably altered by the process of desiccation. Similarly, the procedure has little effect on the cholesterol, bilirubin, fatty acid, mucin and bile acid content of bile. Moreover, there is little change in the surface tension and viscosity of an aqueous solution of deciccated bile as compared with the physical properties of the original bile. The increase in the free choline, which is accompanied by a decrease in the amount of phospholipid, in the desiccated bile would not have a harmful effect, according to the Detroit investigators.

In general, the data obtained as a result of numerous analyses carried out on bile before and after drying indicate that it is possible to prepare desicca ed bile by a mild treatment involving concentration in vacuo at a low temperature without significantly altering its chemical composition. A solution properly prepared from desiccated bile does not differ appreciably from whole bile with respect to its chemical and physical properties.

1. Dam, H., and Glavind, J.: Acta med. Skandinav. **98**: 108, 1938. Stewart, J. D.: Ann. Surg. **109**: 588 (April) 1939.
2. Quick, A. J.; Stanley-Brown, Margaret, and Bancroft, F. W.: Am. J. M. Sc. **190**: 501 (Oct.) 1935.
3. Johnston, C. G.: Surgery **3**: 875 (June) 1938.
4. Irvin, J. L.; Merker, Harvey; Anderson, C. E., and Johnston, C. G.: J. Biol. Chem. **131**: 439 (Dec.) 1939.

NATIONAL CONFERENCE ON MEDICAL NOMENCLATURE

On March 1 representatives of specialist societies, hospital organizations, government services and other interested groups met at the headquarters of the American Medical Association in Chicago as the National Conference on Medical Nomenclature. Many problems of classifying disease were considered, both in the form of papers and reports and in discussions. The formal classification of disease involves educational factors, questions of facilitating clinical research, the organization of hospital record libraries, comparative morbidity statistics and morbidity reports and the relation of morbidity to the International List of Causes of Death.

At the conference it was brought out by several of the speakers that eponyms are in general inadvisable as labels for disease. There is, perhaps, a trend toward the use of English rather than Latin terms in classifying disease, but it is, of course, impossible to separate all terms from their Latin or Greek derivatives. The confusion of terms in some branches of medicine, in

particular, was emphasized and the inevitable corollary that preferred terms should be chosen, even at the risk of occasional arbitrary decisions. It was also apparent that advance in some fields of medicine necessitates a reexamination of the entire subject of the classification of diseases in those fields.

Several papers and discussions dealt particularly with the methods which can be used in adapting the Standard Classified Nomenclature of Disease to clinical research and to the preparation of reports on the incidence of disease, from single hospitals or groups of hospitals, by the use of punch cards and tabulating methods. The demonstration of the uses to which such a classification can be put emphasizes the deficiencies heretofore existent in most summarizations of morbidity statistics. Indeed, what has been already accomplished may be considered to point the way toward more accurate and more extensive use of tabulating methods in the morbidity field.

The conference agreed unanimously that a similar conference should meet again in five years and that the Standard Classified Nomenclature of Disease be revised at periods of approximately five years. In the interim, it was suggested that an editorial advisory board be appointed to concern itself with problems which may require more constant supervision than can be attained by the periodic meetings of the National Conference itself. The conference approved the preparation of a standard nomenclature of operations. A complete summarized report of the conference will be published in forthcoming issues of THE JOURNAL.

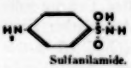
THIAZOLE DERIVATIVES OF SULFANILAMIDE

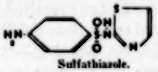
Since the introduction of sulfanilamide into American therapeutics early in 1937 the Council on Pharmacy and Chemistry has followed new developments carefully. Both THE JOURNAL and the Council on Pharmacy and Chemistry have commented repeatedly on the necessity of careful administration of sulfanilamide and its compounds. The tremendous potentialities of the particular chemical grouping represented in the sulfanilamide compounds have warranted the belief that many new paths of therapeutic usefulness would be opened. Progress has been so rapid that the Council has been obliged to issue four succeeding revisions of its statement of actions and uses for the description of the drug in New and Nonofficial Remedies.[1]

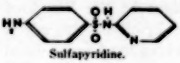
The introduction of sulfanilamide, as was to be expected, was soon followed by the presentation of a derivative representing a combination of pyridine and sulfanilamide, which received the nonproprietary term sulfapyridine. The Council on Pharmacy and Chemistry has also published recently a revised statement of the actions and uses of sulfapyridine,[2] necessitated by the additional knowledge beyond that obtainable in May 1939, when the product was accepted.

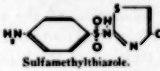
1. Sulfanilamide, J. A. M. A. **114**:326 (Jan. 27) 1940.
2. Sulfapyridine, J. A. M. A. **114**:327 (Jan. 27) 1940.

Now come reports of two more derivatives of sulfanilamide—sulfathiazole and sulfamethylthiazole. Elsewhere in this issue appears a preliminary report of the Council, prepared by Dr. Perrin H. Long,[3] on these substances. All of these sulfanilamide derivatives are quite similar in their basic character, as is illustrated by the following graphic formulas:


Sulfanilamide.


Sulfathiazole.


Sulfapyridine.


Sulfamethylthiazole.

It is too early to state definitely just what advantages, if any, these derivatives may have over sulfanilamide and sulfapyridine. One group of workers (Herrell and Brown) have stated that sulfamethylthiazole has been found efficient in the treatment of some infections caused by staphylococcus organisms. Further investigation of the effectiveness of the compound in diseases caused by staphylococci is decidedly in order, for if the product is found to be of value in these diseases it certainly will have advantages over sulfanilamide. Again it is fortunate that the product has not been placed on the open market before physicians are given an opportunity to know more about it. In this way, unwise use will be minimized and its true merit can be properly evaluated in those laboratories which have competent facilities for such investigation. As Dr. Long concludes in the preliminary report: "The evaluation of these new chemotherapeutic compounds will necessitate extensive experimental and clinical investigations in order to determine their efficiency in the control of infections and their clinical toxic manifestations. Until the time when such data are in hand, it is to be hoped that enthusiasms do not outrun common sense."

Current Comment

THE DISTINGUISHED SERVICE MEDAL

The Distinguished Service Medal of the American Medical Association will be presented for the third time at the opening general meeting at the annual session of the Association in New York on June 11. This medal was awarded in 1938 to Dr. Rudolph Matas, distinguished surgeon of New Orleans, and last year to Dr. James B. Herrick of Chicago. By the system of selection this award has come to be recognized as one of the most distinguished honors within the gift of the Association. The method of selection of the recipient of the Distinguished Service Medal is specifically defined in the By-Laws of the Association. Any Fel-

3. Long, P. H.: Thiazole Derivatives of Sulfanilamide, this issue, p. 870.

low of the Association may submit nominations, which should be sent, together with a record of the scientific services of the nominees, to the chairman of the Committee on Distinguished Service Awards or to the Secretary of the Association. Dr. Grant C. Madill, 214 King Street, Ogdensburg, N. Y., is chairman of the Committee on Distinguished Service Awards. Of all nominations received by the committee, five are submitted to the Board of Trustees of the Association, from which the Board selects three to be submitted to the House of Delegates at its first meeting. Immediately on submission of the nominations by the Board of Trustees, the House of Delegates by official vote selects the recipient of the honor, to whom the Distinguished Service Medal is presented on the evening of the following day. Obviously, an extended list of distinguished physicians nominated for this award will enable the Committee on Awards, the Board of Trustees and the House of Delegates, all of whom participate in the selection, to determine for 1940 a recipient of distinction, whose nomination again will reflect favorably not only on himself but also on the Association.

UNITED STATES COURT OF APPEALS REVERSES DECISION OF LOWER COURT

The United States Court of Appeals on March 4 reversed a district court decision by Justice Proctor that medicine was a "learned profession" and therefore not within the scope of the Sherman antitrust act. As part of its decision, the Court of Appeals said "The fact that defendants are physicians and medical organizations is of no significance." At the heart of the litigation is the question whether the law against restraint of trade applies to the medical profession. The court said "We think enough has been said to demonstrate that the common law governing restraint of trade has not been confined, as defendants insist, to the field of commercial activity, ordinarily defined as 'trade,' but embraces as well the field of the medical profession." Again the court said: "It cannot be admitted that the medical profession may through its great medical societies, either by rule or disciplinary proceedings, legally effectuate restraints as far reaching as those now charged." In addition the Court of Appeals held that, while the charge against the American Medical Association may be wholly unwarranted, "For present purposes we must take the charge as though its verity were established; and, in that light, it seems to us clear that the offense is within the condemnation of the statute." The court also said "It certainly cannot be doubted, that Congress intended to exert its full power in the public interest, to set free from unreasonable obstruction the exercise of those rights and privileges which are a part of our constitutional inheritance, and these include immunity from compulsory work at the will of another, the right to choose an occupation, the right to engage in any lawful calling for which one has the requisite capacity, skill, material or capital, and thereafter free enjoyment of the fruits of one's labors." And, it stated, "Congress undoubtedly legislated on the common law principle that every person has individually, and that the public has collectively, a right to require the course of all legitimate occupations in the District of Columbia to be free from unreasonable obstruction, and likewise in recognition of the fact that all trades, businesses and professions which prevent idleness and exercise men in labor and employment for the benefit of themselves and their families and for the increase of their substance are desirable in the public good and any undue restraint upon them is wrong and is immediate and unreasonable and, therefore, within the purview of the Sherman act." Further, the court said, "we are mindful of a generally known fact that under these rules and standards [of the medical profession] there has developed an *esprit de corps* largely as a result of which the members of the profession contribute a considerable portion of their time to the relief of the unfortunate and the destitute. All of which may well be acknowledged to their credit. Notwithstanding these important considerations, it cannot be admitted that the medical profession may, through its great medical societies, either by rule or disciplinary proceedings, legally effectuate restraints as far reaching as those now charged." Although the attorneys for the American Medical Association have not yet reached a decision as to the next step to be followed, it seems reasonable to believe that they will now go to the United States Supreme Court with a request for a definite decision as to whether or not the practice of medicine comes within the purview of the Sherman antitrust law.

COURT OF APPEALS RULES AGAINST BRINKLEY

Last week the United States Fifth Circuit Court of Appeals at New Orleans upheld a federal district court decision in the libel suit brought by John R. Brinkley against the editor of *Hygeia*. The statement of the court in making this decision was as follows:

> We are spared the necessity of discussing the assignments of error in this decision and of reviewing the evidence. It is sufficient to say that the evidence of the plaintiff, placed on the stand by the defendant, tends to show the truth of the statements of fact complained of, and we find no substantial evidence tending to show the defendant was actuated by malice or that plaintiff suffered any actual damage compensable in money.

In the presentation of its case before the federal district court the American Medical Association revealed a long trail of dubious medical activities on the part of Dr. John R. Brinkley for which there was no refutation. In the meantime he continues to broadcast from his station across the Rio Grande, and the United States Post Office continues to permit him the use of the United States mails.

ORGANIZATION SECTION

LEGISLATION OF INTEREST TO PHYSICIANS CONSIDERED BY STATE LEGISLATURES IN 1939

PREPARED BY T. V. McDAVITT OF THE BUREAU OF LEGAL MEDICINE AND LEGISLATION

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During 1939 the legislatures of all the states, except Kentucky, Louisiana, Mississippi and Virginia, met in regular session, and special sessions were also held in five of them. More than 63,000 proposals were considered, of which not less than 4,000 were of definite medical interest. This survey, however, must be limited to reporting as briefly as possible what are deemed to be the more significant of those proposals—significant from the standpoint of public health and the medical profession. To expedite perusal for those more interested in ascertaining what the legislatures have perpetrated in the name of legislation than what could have been or may in the future be, enactments are printed in larger (10 point) type, while proposals failing of enactment and footnotes are printed in the usual type of the survey (8 point and 6 point).

I. STATE MEDICINE: COMPULSORY AND VOLUNTARY MEDICAL, DENTAL AND HOSPITAL SERVICE PLANS

COMPULSORY HEALTH INSURANCE.—Bills similar to, if not identical with, "The Social Security Bill for Health Insurance," prepared by the American Association for Social Security, failed of enactment in California,[1] Connecticut,[2] Massachusetts,[3] New York,[4] Pennsylvania,[5] Rhode Island[6] and Wisconsin.[7] These bills proposed a system of compulsory and voluntary sickness insurance, the benefits of which were to consist of cash in all forms of medical, dental and hospital service. In most of them, persons employed at "other than manual labor" and receiving wages in excess of $60 a week, farm laborers and persons employed by an employer having less than three employees in personal or domestic services were to be excluded from the compulsory insurance of the bill but were to be entitled to participate in the voluntary insurance. All other employees were embraced in the compulsory feature of these bills.

The life of the committee authorized by New York Laws, 1938, c. 682, to investigate the health requirements of the people and to recommend such health insurance proposals with respect to state medicine as it deems advisable was extended to March 15, 1940, by a New York law.[8]

Bills were killed in Connecticut[9] and Ohio[10] to create commissions to study the subject of health insurance, with a view to establishing systems of health insurance for the states and to report to the legislature recommendations for appropriate legislation.

VOLUNTARY MEDICAL SERVICE PLANS.—Laws were enacted in Connecticut,[11] Michigan,[12] New York,[13] Pennsylvania[14] and Vermont[15] permitting nonprofit corporations which are authorized by a designated state agency to do so to operate on a prepayment basis nonprofit medical service plans whereby stated medical services and care may be rendered at the expense of the corporations to subscribers to such plans and their dependents. Generally speaking, these plans contemplate that the subscriber shall have available the services of a physician of his own choice and that the corporation itself will pay the bills incurred to the phy-

1. Calif. S. 1128, S. 551.
2. Conn. H. 1451.
3. Mass. H. 1898.
4. N. Y. A. 2252, A. 2241.
5. Pa. H. 671.
6. R. I. H. 809.
7. Wis. A. 807.
8. N. Y., Laws, 1939, c.——, approved June 9, introduced as A. 2082.
9. Conn. H. 1495.
10. Ohio H. 171.
11. Conn., Laws, 1939, c. 338.
12. Mich., Acts, 1939, Public Act No. 108 (a companion bill, H. 386, failed of enactment).
13. N. Y., Laws, 1939, c. 882 (the following similar bills were killed: A. 569, A. 1923, A. 1982, S. 1719).
14. Pa., Acts 1939, Acts No. 398 and 399.
15. Vt., Laws, 1939, c.——, approved April 14, introduced as S. 60.

sicians chosen by the subscribers. The New York act, however, seems to contemplate that the subscriber will be reimbursed by the corporation for the amount he has expended for such services.

The Vermont law specifically permits the formation of corporations for the rendering of dental, osteopathic, chiropractic or chiropodic care.

Bills proposing to authorize the operation of medical service plans were killed in California,[16] Illinois,[17] Ohio,[18] Utah,[19] Washington[20] and Wisconsin.[21] Bills were killed in Michigan[22] and Pennsylvania[23] proposing to authorize the operation of similar plans for osteopathic care.

One Washington bill,[24] which was killed, proposed to authorize employers to contract for the providing of medical, nursing and hospital care to employees on an insurance basis. Another unsuccessful Washington bill[25] proposed to create a commission to investigate medical service bureaus.

Laws were enacted in two states which would seem to permit designated groups to provide for their members what may well be medical and hospital service plans. The Missouri Insurance Code was so amended[26] as to permit fraternal benefit societies to operate for the benefit of its sick members and their dependents plans whereby medical and hospital services may be rendered free or at a rate determined on.

A new Arkansas law[27] authorizes agricultural cooperatives, among other things, "to engage in any activity in connection with . . . the furnishing of medical, dental, health, hospitalization, nursing, or any related services, or medicines or medical supplies to its members and/or their families."

VOLUNTARY HOSPITAL SERVICE PLANS.—Laws were enacted in Alabama,[28] Connecticut,[29] Florida,[30] Iowa,[31] Maine,[32] Michigan,[33] New Hampshire,[34] New Mexico,[35] Ohio,[36] Rhode Island,[37] South Carolina,[38] Texas,[39] Vermont[40] and Wisconsin[41] authorizing the formation of nonprofit corporations to provide on a prepayment basis hospital care to their members or subscribers.

Similar bills were killed in nine states.[42]

Unsuccessful attempts were made in two states[43] apparently to legalize the activities of organizations now operating hospital service plans.

A resolution was adopted in Maryland[44] requesting the governor to appoint a commission to study the question of compulsory hospital insurance.

As previously noted, the legislature of Washington rejected two bills on this subject. One bill[45] proposed to authorize employers to contract for the providing of employees with medical treatment, nursing and hospital care on an insurance basis. The other bill[46] proposed to create a commission to investigate hospital associations and medical service bureaus.

The prior California nonprofit hospital service plan law was amended this year.[47] Of particular interest is the new definition of "hospital services," which is stated to include "maintenance and care in hospital, nursing care, drugs, medicine, physiotherapy, transportation, material appliances and their upkeep, and *indemnification of the beneficiary or subscriber for the costs and expense of professional medical service rendered during hospitalization.*"

The Massachusetts nonprofit hospital service plan law was so amended,[48] among other things, as to provide that the contracts issued and the rates charged by a hospital service plan corporation shall at all times be subject to the approval of the Commissioner of Insurance.

FREE CARE OF THE INDIGENT SICK OR THE GENERAL PUBLIC.—A new Michigan law[49] requires the several counties to provide for the rendering of medical care to indigents. Medical care is to include home and office attendance by licensed physicians, dental services, optometric services, bedside nursing services in the home and pharmaceutical service. The law specifically provides that the private physician-patient relationship must be maintained provided only that nothing in the law is to be construed as affecting the office of any city physician established under any city charter or of any county health officers or of the medical superintendent of any county hospital.

A far reaching bill to establish a statewide plan of public medicine was killed in New York.[50] Apparently all kinds of medical, surgical, dental, hospital and nursing care were to be rendered to the public at large without cost. All licensed practitioners of medicine, dentistry, pharmacy and nursing who elected to accept and submit to the provisions of the bill were to receive an annual compensation from the state of up to $6,000. The state department of health was to have exclusive charge and control over the public hospitals of the state and was to exercise complete supervisory powers over all private hospitals.

A bill was killed in California[51] to provide a system, under the supervision of the state department of public health for providing medical care, including medical, dental, nursing and hospital care and the supplying of pharmaceutical and therapeutic appliances to needy persons, the cost of which was to be apportioned between the state and the county.

A new Indiana law[52] provides that any legal resident of the state over 16 suffering from a condition or malady, not chronic, or deformity that is susceptible of improvement, cure or benefit by medical or surgical treatment or hospital care or by special study and diagnosis may be admitted on the commitment of any judge to any hospital operated by the trustees of Indiana University and treated therein. The cost of the cure and treatment of the person committed is to be paid by the county from which the person is committed.

Bills were adopted in four states authorizing specified counties to levy taxes to be used for the medical and hospital treatment of the indigent sick.[53]

16. Calif. A. 2494, A. 2501, A. 1712, S. 548.
17. Ill. H. 977.
18. Ohio S. 104.
19. Utah S. 177, H. 225.
20. Wash. H. 209.
21. Wis. A. 461.
22. Mich. H. 386.
23. Pa. H. 1098, H. 934.
24. Wash. H. 199.
25. Wash. S. 311.
26. Mo., Laws, 1939, c.——, approved July 8, introduced as S. 286.
27. Ark., Acts, 1939, Act. 153.
28. Ala., Laws, 1939, Gov. No. 491.
29. Conn., Laws, 1939, c. 150.
30. Fla., Laws, 1939, c. 19108.
31. Iowa, Laws, 1939, c. 222.
32. Me., Public Laws, 1939, c. 149; Public and Special Laws, 1939, c. 24.
33. Mich., Acts, 1939, Public Act No. 109.
34. N. H., Laws, 1939, c.——, approved April 13, introduced as H. 232.
35. N. M., Laws, 1939, c. 65, c. 66.
36. Ohio, Laws, 1939, c.——, approved April 12, introduced as S. 181.
37. R. I., Laws, 1939, c. 719.
38. S. C., Laws, 1939, Gov. No. 660.
39. Texas, Laws, 1939, c.——, approved, May 10, introduced as H. 191 (a companion bill, S. 127, was killed).
40. Vt., Laws, 1939, c.——, approved April 10, introduced as H. 68.
41. Wis., Laws, 1939, c. 118 (a companion bill, A. 319, was killed).
42. Fla. S. 149, H. 74; Ind. H. 241; Minn. H. 1367, S. 1248; Neb. Bill 507; Tenn. H. 997; Texas S. 127; Utah S. 177; Wash. S. 131; W. Va. S. 107.
43. Ark. S. 304; N. M. H. 58.
44. Md., Laws, 1939, Res. No. 12.
45. Wash. H. 199.
46. Wash. S. 311.
47. Calif., Laws, 1939, c. 112, c. 523.
48. Laws, Mass., 1939, c. 312.
49. Mich., Laws, 1939, Public Act No. 280.
50. N. Y. A. 523.
51. Calif. A. 1874.
52. Ind., Laws, 1939, c. 6.
53. Del., Laws, 1939, c.——, approved May 4, introduced as S. 257; Fla., Laws, 1939, c.——, approved June 5, introduced as S. 606, c.——, approved May 17, introduced as H. 760; N. C., Public Local Laws, 1939, c. 470; S. C., Laws, 1939, Gov. Act. No. 215, Act. No. 438.

A new Georgia law [54] authorizes counties to levy a 1 mill tax to provide medical care and hospitalization for indigent sick residents.

A new Texas law [55] authorizes each county to levy a tax not to exceed 10c on the hundred dollar valuation on taxable property to buy necessary vaccines and to pay for the necessary medical services required for the immunization of school children and indigents from communicable diseases and to pay as much as one half for medical treatment and hospitalization of people not paupers.

Another Texas bill, which failed of enactment,[56] proposed to create a state department of hospitalization and medical care to provide for the hospitalization and treatment of the indigent sick and indigent expectant mothers.

An unsuccessful attempt was made in New Mexico [57] to authorize the board of county commissioners of each county to employ a county health physician and a county health nurse. Two Oklahoma bills,[58] which were killed, proposed to authorize the state commissioner of health to appoint one regularly licensed physician for each county in the state to give medical treatment free of charge to such persons as would make affidavit that they were unable to pay for treatment.

Unsuccessful attempts were made in Connecticut [59] and Illinois [60] to provide for the rendering of medical services at state expense to recipients of old age assistance. An unsuccessful Washington bill [61] provided somewhat similar services with respect to recipients of blind assistance.

Laws were enacted in Connecticut,[62] Illinois [63] Indiana [64] and New Jersey,[65] appropriating stated sums to the state board or department of health for the purchase and free distribution of pneumococcus serum for the treatment of persons afflicted with pneumonia and financially unable to purchase the serum. No specific appropriation was made in the Connecticut law, while the appropriation in Illinois was $75,000, $95,000 in Indiana and $25,000 in New Jersey. The Indiana laws authorize the distribution also of diphtheria toxoid, smallpox virus and typhoid bacterins.

A new Florida law [66] appropriates $10,000 to the state board of health with which it is to purchase and distribute insulin to persons needing it and financially unable to purchase it.

A somewhat similar bill was killed in Wisconsin.[67]

A new Connecticut law [68] authorizes the state department of health to furnish such treatment to indigent typhoid or paratyphoid fever germ carriers as may be necessary to relieve them of the carrier state.

An unsuccessful Pennsylvania bill [69] proposed to authorize the department of welfare to supply hearing aids or devices to persons who are deaf or hard of hearing and who are financially unable to purchase them.

Two New York bills, which were killed,[70] proposed to require local boards of health and local health officers to provide to persons infected with poliomyelitis suitable surgical, medical or therapeutic treatment or hospital care and necessary appliances and devices provided the person so infected was not able financially to provide for himself. Two other unsuccessful New York bills [71] proposed to impose on counties or other political subdivisions the duty of supplying such "physical repair" to physically handicapped unemployed adult persons and to require the state to reimburse the local political subdivisions 75 per cent of the total expended by them for such purpose. Two other New York bills, which likewise failed of enactment [72] proposed to create a temporary commission to survey the existence and prevalence of hay fever in the state, to devise ways and means for its prevention and elimination and to recommend methods for the treatment, relief and cure of persons suffering from hay fever.

Legislation relating to cancer control and the extent of aid rendered at public expense to afflicted persons will be subsequently discussed in this survey at p. 879.

II. LEGISLATION AIMED AT THE CONTROL OF VENEREAL DISEASE, DIPHTHERIA, CANCER AND OTHER DISEASES

PREMARITAL EXAMINATIONS.—Laws to require as a condition precedent to the issuance of a marriage license that each party to the proposed marriage present a certificate of a licensed physician that the party has been given such examination, including a standard serologic test, as may be necessary for the discovery of syphilis, made on a day specified in the statement, which shall be not more than thirty days prior to the day on which the license is applied for, and that in the opinion of the physician the party named is not infected with syphilis or, if so affected, is not in a stage of that disease whereby it is communicable, were enacted in California,[73] Colorado,[74] Indiana,[75] North Carolina,[76] North Dakota,[77] Pennsylvania,[78] South Dakota,[79] Tennessee [80] and West Virginia.[81] In addition, the North Carolina and Tennessee laws require a similar statement with respect to all venereal diseases.

Proposals to condition the issuance of a license to marry on the presentation by both parties to the proposed marriage of a physician's certificate as to freedom from an infectious stage of a stated venereal disease were rejected in sixteen other states.[82]

Existing laws requiring premarital examinations were amended in Illinois,[83] Michigan [84] and New York.[85] The principal change effected by the new Illinois law is to provide that the laboratory tests for venereal diseases prescribed in the act must be tests approved by the state department of public health and must be made by laboratories of that department or by such other laboratories as the department approves. The new Michigan law raises to thirty days from fifteen days the period prior to the issuance of a license to marry during which the applicants must have been examined for the presence of the stated venereal diseases. The law also requires freedom on the part of

54. Ga., Laws, 1939, Gov. Act. No. 56.
55. Texas, Laws, 1939, c.——, Law without Approval June 13, introduced as H. 927.
56. Texas H. 144.
57. N. M. H. 31.
58. Okla. H. 76, S. 17.
59. Conn., S. 875.
60. Ill. S. 9.
61. Wash. S. 187.
62. Conn., Laws, 1939, c.——, approved June 19, introduced as H. 1679.
63. Ill., Laws, 1939, p. ——, approved March 22, introduced as H. 408.
64. Ind., Laws, 1939, c. 5, c. 33.
65. N. J., Laws, 1939, c. 13.
66. Fla., Laws, 1939, c. 19553.
67. Wis. A. 823.
68. Conn., Laws, 1939, c. 285.
69. Pa. H. 756.
70. N. Y. S. 130, A. 175.
71. N. Y. A. 2251, S. 1786.
72. N. Y. S. 1776, A. 2243.
73. Calif., Laws, 1939, c. 382 (A. 32, A. 106, A. 342, A 714 and S. 79, all of which were similar bills, were also considered in California but were not acted on).
74. Colo., Laws, 1939, c. 128.
75. Ind., Laws, 1939, c. 100.
76. N. C., Laws, 1939, c. 314.
77. N. D., Laws, 1939, c. 162.
78. Pa., Acts, 1939, Act. No. 76 (similar bills, S. 13 and S. 129, were vetoed earlier in the session by the governor).
79. S. D., Laws, 1939, c. 36.
80. Tenn., Public Acts, 1939, c. 122 (a companion bill, S. 256).
81. W. Va., Laws, 1939, c. 81 (a companion bill, S. 40).
82. Ala. H. 161; Ark. H. 58, H. 252, S. 143; Ariz. H. 3; Fla. H. 527; Ga. S. 42, H. 222; Idaho H. 253; Iowa S. 27, H. 59; Me. H. 1195; Mass. H. 74, H. 287, H. 551, H. 1828, H. 2281; Mo. H. 39, S. 5, H. 717; Nev. A. 165; Ohio H. 268, H. 379, S. 28; Okla. H. 131; Texas H. 61, H. 1093; Vt. H. 15, H. 319; Wash. S. 373.
83. Ill., Laws, 1939, p. 706.
84. Mich., Acts, 1939, Public Act No. 112.
85. New York, Laws, 1939, c. 110.

the applicants from an infectious stage of syphilis, gonorrhea or chancroid, while the prior law required freedom from all venereal diseases. Laboratories which can make the indicated tests must be approved by the state commissioner of health. The test required in the new law for syphilis is "a serological test approved by the commissioner." The prior law required a Kahn test. The new New York law effects several minor changes in the prior law. Possibly the most important change effected is to provide that the examination conducted by the certifying physician must be made not earlier than thirty days prior to the date on which the license is applied for. The prior law contained a twenty day period.

Bills to amend existing premarital examination laws were killed in Oregon[86] and Wisconsin.[87] Both of these bills proposed certain state facilities to render the required laboratory examinations free of cost.

BLOOD TESTS OF PREGNANT WOMEN.—Laws to require a licensed physician or other person engaged in the antepartum care of a pregnant woman, or attending such a woman at the time of delivery, to obtain a specimen of her blood and to submit the specimen to an approved laboratory for a standard laboratory test for syphilis were enacted in California,[88] Colorado,[89] Delaware,[90] Illinois,[91] Indiana,[92] Iowa,[93] Maine,[94] Massachusetts,[95] Michigan,[96] North Carolina,[97] Oklahoma,[98] Pennsylvania,[99] South Dakota[100] and Washington.[101]

Similar bills were killed in six other states.[102]

REPORTING OF VENEREAL DISEASE.—A new Alabama law[103] requires a physician diagnosing or treating a case of syphilis, gonorrhea, chancroid, venereal lymphogranuloma or granuloma venereum to report the facts immediately to the county health officer. The law requires a similar report from the superintendent or manager of a hospital, dispensary or penal or other institution in which there is a case of venereal disease.

A similar bill failed of enactment in New Jersey.[104]

COMPULSORY TREATMENT OF VENEREAL DISEASE.—A new Alabama law[105] authorizes the county health officer to require all persons infected with a venereal disease to undergo treatment by a licensed physician and if such persons are unable to pay for such treatment the health officer may require them to submit to treatment at public expense. The law also authorizes the county health officer to isolate or quarantine persons infected with venereal disease and to commit to jail for treatment persons refusing to take or continue treatments as provided in the act.

86. Ore. S. 30.
87. Wis. S. 251.
88. Calif., Laws, 1939, c. 127 (similar bills considered by the California legislature were S. 80, S. 130, and A. 831).
89. Colo., Laws, 1939, c. 113 (S. 330 and S. 331 were similar bills which were not acted on by the Colorado Senate).
90. Del., Laws, 1939, c.——, approved March 8, introduced as S. 27.
91. Ill., Laws, p. 708.
92. Ind., Laws, 1939, c. 12.
93. Iowa, Laws, 1939, c. 82.
94. Me., Public Laws, 1939, c. 290.
95. Mass., Laws, 1939, c. 407 (a similar bill, H. 1827, was also before the Massachusetts legislature).
96. Mich., Acts, 1939, Public Act. No. 106 (a similar bill, H. 140, was also considered).
97. N. C., Laws, 1939, c. 313.
98. Okla., Laws, 1939, c.——, approved March 10, introduced as S. 92.
99. Pa., Acts, 1939, Act. No. 360 (a similar bill, S. 12 was vetoed earlier in the session by the governor).
100. S. D., Laws, 1939, c. 103.
101. Wash., Laws, 1939, c. 165.
102. Ariz. H. 209; Conn. H. 294; Md. H. 103; Nev. A. 192; N. M. H. 282; Tenn. H. 1039.
103. Ala., Laws, 1939, Gov. No. 229.
104. N. J. S. 171.
105. Ala., Laws, 1939, Gov. No. 366.

FREE TREATMENT FOR INFECTED INDIGENTS.—A new Florida law[106] authorizes counties of from 53,000 to 57,000 population to provide medical treatment at county expense to all indigent residents suffering from venereal disease.

STATE FACILITIES FOR THE DIAGNOSIS OF VENEREAL DISEASE.—A new Oregon law[107] amends the prior law directing the state board of health to provide free of charge facilities for the necessary laboratory examinations for the diagnosis of venereal disease and to provide the necessary materials for the proper treatment of those diseases to persons whom the attending physician certifies are unable to pay therefor by requiring as a condition precedent to the rendition of the services and the supplying of the materials noted to the attending physician that the attending physician certify that he will make no charge to the patient for the treatment of the diseases for which the test is made.

DISTRIBUTION OF ANTISYPHILITIC DRUGS.—Bills were killed in Florida[108] and Utah[109] to provide for the distribution at state expense of stated antisyphilitic drugs to persons afflicted with syphilis who are financially unable to purchase them.

BLOOD TESTS OF PHYSICIANS, DENTISTS AND NURSES.—A bill was killed in Indiana[110] which proposed to require every physician, dentist and nurse at least once every twenty-four months to cause to be submitted to an approved laboratory for a standard serologic test for syphilis a sample of his blood. If any such test should show that a physician, dentist or nurse was infected with syphilis the license of such person should be automatically suspended and remain suspended so long as the disease was in a stage whereby it was communicable.

SPECIFIC APPROPRIATIONS FOR THE ERADICATION OF VENEREAL DISEASE.—A new Colorado law[111] appropriates $12,000 to the state board of health for the period ending June 30, 1941, to be used for "venereal disease control work."

A bill was killed in Texas[112] which proposed to appropriate $150,000 to the state department of health to assist in the eradication of venereal disease in the state.

PHYSICAL EXAMINATION OF FOOD HANDLERS OR DOMESTIC SERVANTS.—A new Texas law[113] prohibits the employment in any public eating or sleeping place or place where food, drink or candy is prepared, stored, packed or served of any person with an infectious or contagious disease. Any person so employed must present every six months a physician's certificate that he has examined the employee and has found him free from all infectious or contagious diseases.

Similar bills were killed in five states.[114]

The Governor of New York vetoed a bill[115] proposing to prohibit a person with a communicable or contagious disease from working or being permitted to work in a factory wherein a food product is manufactured and to require any employee of such a factory when required by a medical inspector of the labor department to submit to a physical examination.

A bill was killed in New York[116] to prohibit the employment as a domestic servant of any person who does not possess a physician's certificate as to freedom from syphilis and to require such servants to submit to an examination to determine that fact annually.

106. Fla., Laws, 1939, c.——, approved June 5, introduced as S. 606.
107. Ore., Laws, 1939, c. 301.
108. Fla. H. 174.
109. Utah S. 239.
110. Ind. H. 494.
111. Colo., Laws, 1939, c.——, approved May 24, introduced as H. 823.
112. Texas S. 101.
113. Texas, Laws, 1939, c.——, approved April 26, introduced as H. 142.
114. Ill. H. 230; Iowa H. 36; N. Y. A. 302; Ohio H. 176; Tenn. H. 1038.
115. N. Y. A. 1308
116. N. Y. A. 2242.

IMMUNIZATION TO DIPHTHERIA.—A law was enacted in North Carolina [117] requiring the parents or guardian of any child in the state to have administered to the child between the ages of 6 and 12 months an immunizing dose of a prophylactic diphtheria agent approved by the United States Public Health Service. A similar duty rests on parents and guardians of children between 1 and 5 years of age who have not been immunized previously against diphtheria. If the parents or guardians are financially unable to pay a physician of their own choice to perform the required immunization, the appropriate county health officer is to administer such treatment free of charge.

A new New Jersey law [118] authorizes any board of education to condition school attendance on proof of immunity to diphtheria. Such board may provide free of cost materials and services for the required immunization.

CANCER.—Laws aimed to aid in the eradication of cancer were enacted in four states. In Illinois new laws [119] create in the department of health a division of cancer control and an advisory board to that division which is authorized to receive voluntary contributions from any source and to expend them for cancer control. An appropriation of $25,400 was also made to enable the department of health to establish a cancer diagnostic service. In Wisconsin [120] provision was made for the annual appropriation of $10,000 for research into the causes, prevention and cure of cancer. A new South Carolina law [121] authorizes the state board of health to establish a standard for the conduct of cancer units in general hospitals, to provide financial aid to indigent cancer patients in such approved cancer units and to establish such facilities as it deems advisable to afford proper treatment and care. The board is also directed to carry on a proper educational program to prevent cancer, to aid in the early diagnosis of the disease and to inform hospitals and cancer victims concerning proper treatment. In Vermont [122] a state cancer commission was created to be composed of the chairman of the cancer committee of the state medical society, two other members of the society and a layman. The commission is to establish and conduct cancer clinics throughout the state, which clinics are to furnish care to indigent cancer victims. The commission may grant state aid for care in any place in the state to afflicted persons who are not wholly indigent but are without means of providing adequate care for themselves. The names of persons receiving such aid may not be made public. An appropriation of $10,000 was made to the commission for each of the next two years.

EXAMINATION OF PUBLIC SCHOOL PUPILS AND EMPLOYEES.—A new New Jersey law [123] requires every board of education periodically to determine or cause to be determined the presence or absence of communicable tuberculosis in pupils in schools under its jurisdiction. The state board of education is directed to promulgate rules and regulations with respect to the frequency and procedure of such examinations. Any pupil found to have tuberculosis in a communicable stage must be excluded from the school and can be readmitted only when satisfactory evidence is adduced that he or she is free from communicable tuberculosis, is physically competent to engage in school activities and is not a menace to the health of other pupils. Another new New Jersey law [124] provides that in conducting the examinations of pupils required by law, the medical inspector may require pupils to loosen, open, or remove their clothing above the waist in a manner to facilitate inspection and examination, provided the parents or guardian are notified in writing of such proposed examination and the examination is conducted either in the presence of one of the parents or guardian or in the presence of a nurse or teacher. If the parent or guardian of a pupil objects to a proposed examination then the parent or guardian may file with the medical inspector a report of the family physician on the condition for which such examination was deemed advisable by the medical inspector. Still another new New Jersey law [125] authorizes every board of education to require a physical examination of all employees of the board at least once in three years, under such rules and regulations as the state board of education may promulgate. If the result of the examination indicates mental abnormality or a communicable disease, the employee is to be ineligible for further service until satisfactory proof of recovery is furnished.

Unsuccessful attempts were made in three states [126] to require all public school teachers to undergo annually a physical examination and to submit to blood tests to determine the presence or nonpresence of tuberculosis and venereal disease.

BUREAUS OR DIVISIONS OF INDUSTRIAL HYGIENE.—Idaho [127] and Montana [128] enacted laws this year establishing a bureau or division of industrial hygiene respectively in the department of public welfare and in the state board of health primarily to make studies of industrial hygiene, industrial health hazards and occupational disease problems in the state and to establish rules and regulations for the control and prevention of sickness in industry.

III. LEGISLATION REGULATING THE DISTRIBUTION OR POSSESSION OF DRUGS, FOODS, COSMETICS AND THERAPEUTIC DEVICES

NARCOTICS.—Unsuccessful attempts were made in five states [129] to repeal existing laws regulating the possession and distribution of narcotic drugs and to enact what appeared to be the uniform narcotic drug act. An unsuccessful attempt was made in Michigan [130] to repeal the uniform narcotic drug act enacted in 1937.

The uniform narcotic drug acts of Connecticut, Illinois, Indiana, Michigan, New Mexico, New York, Oregon, Rhode Island, Tennessee and West Virginia were so amended this year as either to redefine cannabis, which had previously been included in the act, or to redefine "narcotic drug" so as to include cannabis and to define the term "cannabis" substantially as follows:

"'Cannabis' shall include all parts of the plant Cannabis sativa L., whether growing or not; the seeds thereof; the resin

117. N. C., Public Laws, 1939, c. 126.
118. N. J., Laws, 1939, c. 299.
119. Ill., Laws, 1939, p. 189, p. 1136, p. 1145.
120. Wis., Laws, 1939, c. 408.
121. S. C., Laws, 1939, Gov. No. 661.
122. Vt., Laws, 1939, c. ——, approved March 28, introduced as H. 56.
123. N. J., Laws, 1939, c. 294.
124. N. J., Laws, 1939, c. 296.
125. N. J., Laws, 1939, c. 295.
126. Calif. S. 696; Ind. S. 93; Tenn. H. 1054.
127. Idaho, Laws, 1939, c. 136.
128. Mont., Laws, 1939, c. 127.
129. Kan. H. 330; Me. S. 416; N. H. H. 291; N. D. S. 155, H. 350; Wash. H. 261.
130. Mich. S. 39.

extracted from any part of such plant; and every compound, manufacture, salt, derivative, mixture or preparation of such plant, its seeds, or resin; but shall not include the mature stalks of such plant, fiber produced from such stalks, oil or cake made from the seeds of such plant, any other compound, manufacture, salt, derivative, mixture or preparation of such mature stalks (except the resin extracted therefrom), fiber, oil or cake, or the sterilized seed of such plant which is incapable of germination." [131]

Similar bills were killed in three states.[132]

An unsuccessful attempt was made in Illinois [133] so to amend the uniform narcotic drug act as to increase the penalty that can be imposed for a violation thereof. Likewise, an unsuccessful attempt was made in Michigan [134] so to amend the uniform narcotic drug act as to provide that a physician may cause narcotic drugs to be administered by a nurse or intern under his direction. The present law provides that the physician may cause such drugs to be administered by a nurse or intern under his direction and supervision. A bill was killed in Texas [135] to amend the uniform narcotic drug act in force therein in several particulars.

The narcotic drug act in force in California was amended [136] by adding provisions authorizing the imprisonment of narcotic addicts as defined by the law. Another California amendment [137] contains details concerning prescriptions.

The governor of New Jersey vetoed a bill [138] proposing to authorize a judge of the court of common pleas, after notice and hearing, to commit a narcotic addict to any state, county or city institution for the care and treatment of his addiction.

Laws, other than narcotic drug acts, relating to marihuana were amended or supplemented in five states this year. A new Maine law [139] makes the prior law, which applied to the sale or distribution of cannabis applicable also to "any derivative of cannabis indica or cannabis sativa, either dried or in any cigarettes, tobacco, either smoking or chewing, or snuffing articles, or in any other form whatsoever." A new North Dakota law [140] amends the prior law relating to marihuana by defining marihuana to mean "all parts of the plant Cannabis sativa, and also known as American Hemp and Indian Hemp," and makes it unlawful for any person to grow, sell, trade, furnish, give away or to possess marihuana. The new law also makes it the duty of each sheriff to destroy all marihuana found growing on public highways or state or county lands. New Indiana and New Jersey laws [141] require stated public officials to destroy marihuana weeds. A new Minnesota law [142] permits Indian hemp to be grown for commercial purposes under license of the Commissioner of Agriculture.

An unsuccessful attempt was made in Montana [143] to amend the law prohibiting the distribution or possession of peyote (pellote), and anhalonium or any preparation thereof, so as to provide that the act should not apply to transporting, possessing or using peyote for religious sacramental purposes within the boundaries of an Indian reservation.

131. Conn., Laws, 1939, c. 201; Ill., Laws, 1939, p. 498 (H. 111 and S. 32, to accomplish the same purpose, failed of enactment); Ind., Laws, 1939, c. 8 (S. 136, a companion bill, was killed); Mich., Acts, 1939, Public Act No. 263; N. M., Laws, 1939, c. 96; N. Y., Laws, 1939, c. 131; Ore., Laws, 1939, c. 168; R. I., Laws, 1939, c. 712; Tenn. Pub. Acts, 1939, c. 165; W. Va., Laws, 1939, c. 44.
132. Fla. S. 967; N. Y. S. 1195; Ohio H. 373.
133. Ill. S. 42.
134. Mich., S. 318.
135. Tex. H. 22.
136. Calif., Laws, 1939, c. 1079.
137. Calif., Laws, 1939, c. 1097.
138. N. J. A. 200.
139. Me., Laws, 1939, c. 187.
140. N. D., Laws, 1939, c. 137.
141. Ind., Laws, 1939, c. 120; N. J., Laws, 1939, c.—, approved July 18, introduced as S. 214.
142. Minn., Laws, 1939, c. 405.
143. Mont. S. 83.

BARBITURIC ACID DERIVATIVES.—Laws prohibiting the sale or distribution of stated hypnotic or somnifacient drugs, except on the prescription of a licensed physician, dentist or veterinarian, were enacted in Connecticut,[144] Delaware,[145] Florida,[146] Georgia,[147] Minnesota,[148] Nevada,[149] New York,[150] North Carolina,[151] South Carolina,[152] Tennessee,[153] Vermont [154] and Washington.[155] All the laws referred to apply to the sale or distribution of barbital. The Delaware and New York laws also apply to the sale at retail of sulfonethylmethane (trional), sulfonmethane (sulfonal), diethyl-sulfone, diethyl-methane (tetronal), paraldehyde, chloral or chloral hydrate and chlorbutanol. The Georgia law also applies to amytal, veronal, luminal or any similar drugs. The Minnesota and Vermont laws apply also to veronal, proponal, ipral, dial, neonal, sandoptal, amytal, phenobarbital, phandorn, noctal, allonal or medinal. The Washington law also applies to amytal, luminal, veronal, acid diethylbarbituric, para-amino-benzene sulfonamide, sulfanilamide, sulfamidyl, prontylin, prontosil, neoprontosil, neoprontylin, edimalin, sulfonamid or any salts, derivatives or compounds of any of the drugs mentioned.

Similar bills to restrict the sale or distribution of barbituric acid compounds to distribution on the written prescription of a licensed physician, dentist, or veterinarian were killed in Indiana [156] and Kansas.[157]

A new Maine law [158] prohibits the retail distribution of veronal, or barbital, or any registered, trade-marked or copyrighted preparation registered in the United States Patent Office containing this substance, except on written prescription of a licensed physician, dentist or surgeon. The prior law seemed to permit the substance to be distributed on a written order of a physician, dentist or veterinarian or if dispensed by a licensed pharmacist. The prior law contained no limitation on the distribution of a registered, trade-marked or copyrighted preparation registered in the United States Patent Office containing the aforementioned substance unless the preparation contained more than 40 grains of the drug to the avoirdupois or fluid ounce.

A somewhat similar bill was killed in California.[159]

SULFANILAMIDE.—Laws prohibiting the retail distribution of sulfanilamide except on the written prescription of a licensed physician, dentist or veterinarian were enacted in California,[160] Connecticut,[161] Florida,[162] Nevada,[163] North Carolina,[164] Pennsylvania,[165] Vermont [166] and Washington.[167]

A similar bill was killed in Colorado.[168]

144. Conn., Laws, 1939, c. 364.
145. Del., Laws, 1939, c. —, approved April 6, introduced as H. 143.
146. Fla., Laws, 1939, c. 19656 (S. 73 and H. 247 to accomplish the same end were killed).
147. Ga., Laws, 1939, Gov. Act. No. 184.
148. Minn., Laws, 1939, c. 102 (a companion bill, S. 781, was also considered), c. 193.
149. Nev., Laws, 1939, c. 177.
150. N. Y., Laws, 1939, c. 778 (a companion bill, S. 1209, was also considered).
151. N. C., Laws, 1939, c. 320.
152. S. C., Laws, 1939, Gov. No. 514.
153. Tenn., Public Acts, 1939, c. 164 (a companion bill, H. 739, was also considered).
154. Vt., Laws, 1939, c. —, approved April 12, introduced as H. 34.
155. Wash., Laws, 1939, c. 6, c. 29 (similar bills, S. 24, S. 39 were also considered).
156. Ind. H. 477.
157. Kan. S. 13.
158. Me., Public Laws, 1939, c. 209.
159. Calif. S. 817.
160. Calif., Laws, 1939, c. 730.
161. Conn., Laws, 1939, c. 364.
162. Fla., Laws, 1939, c. 19656.
163. Nev., Laws, 1939, c. 177.
164. N. C., Laws, 1939, c. 320.
165. Pa., Acts, 1939, Act No. 64.
166. Vt., Laws, 1939, c. —, approved April 12, introduced as H. 34.
167. Wash., Laws, 1939, c. 29.
168. Colo. H. 1100.

DINITROPHENOL.—A new California law [169] makes it a felony for any person to sell, dispense, administer or prescribe dinitrophenol for the purpose of human consumption. Laws prohibiting the retail distribution of dinitrophenol except on the prescription of a licensed physician, dentist or veterinarian were enacted in Connecticut,[181] Florida,[182] Nevada [183] and North Carolina.[184]

CINCOPHEN.—Laws prohibiting the retail distribution of cincophen except on the written prescription of a licensed physician, dentist or veterinarian were enacted in California,[170] Connecticut,[171] Florida,[172] Nevada,[173] North Carolina [174] and Vermont.[175]

AMINOPYRINE.—Laws prohibiting the retail sale or distribution of aminopyrine except on the written prescription of a licensed physician, dentist or veterinarian were enacted in California,[176] Connecticut,[177] Florida,[178] Nevada,[179] North Carolina [180] and Vermont.[181]

DIPHENYLAMINE.—A new California law [182] makes it a felony to sell, dispense, administer or prescribe diphenylamine for any purpose.

MISCELLANEOUS DRUGS.—An unsuccessful attempt was made in North Carolina [183] to provide that all medicinal preparations, whether proprietary, patented or sold on prescription, containing acetanilide or any of the bromides, must be marked "poison" on their containers. The Connecticut House killed a bill [184] proposing to prohibit the sale or distribution of dangerous caustic or corrosive substances unless in containers bearing a conspicuous, easily legible label or sticker containing (*a*) the name of the article; (*b*) the name and place of business of the manufacturer, packer, seller or distributor; (*c*) the word "POISON" in letters of not less than 24 point size and (*d*) directions for treating a case of accidental personal injury. A bill was referred to the next session of the legislature in Massachusetts [185] which proposed to prohibit the sale of any medicine "which in and of itself contains enough poison or other deadly drug so that if taken in whole or in part is sufficient to cause the death of the person taking it" unless the container is labeled so as to state the nature of the poison or the deadly drug, what quantity thereof would constitute a lethal dose, and the antidote therefor.

FOODS, DRUGS, COSMETICS AND THERAPEUTIC DEVICES.—Laws were adopted in California,[186] Connecticut,[187] Florida,[188] Indiana,[189] Nevada,[190] New Jersey,[191] New York [192] and North Carolina,[193] repealing prior laws relating to food and drugs and enacting so-called uniform food, drug, cosmetic and device acts to regulate the manufacture, sale, distribution and advertising of foods, drugs, cosmetics and therapeutic devices. These new laws in general correspond with the provisions of the Federal Food, Drug, and Cosmetic Act of 1938.

169. Calif., Laws, 1939, c. 582.
170. Calif., Laws, 1939, c. 730.
171. Conn., Laws, 1939, c. 364.
172. Fla., Laws, 1939, c. 19656.
173. Nev., Laws, 1939, c. 177.
174. N. C., Laws, 1939, c. 320.
175. Vt., Laws, 1939, c. ——, approved April 12, introduced as H. 34.
176. Calif., Laws, 1939, c. 730.
177. Conn., Laws, 1939, c. 364.
178. Fla., Laws, 1939, c. 19656.
179. Nev., Laws, 1939, c. 177.
180. N. C., Laws, 1939, c. 320.
181. Vt., Laws, 1939, c. ——, approved April 12, introduced as H. 34.
182. Calif., Laws, 1939, c. 583.
183. N. C. H. 258.
184. Conn. H. 297.
185. Mass. H. 288.
186. Calif., Laws, 1939, c. 730, c. 731.
187. Conn., Laws, 1939, c. 364.
188. Fla., Laws, 1939, c. 19656.
189. Ind., Laws, 1939, c. 38.
190. Nev., Laws, 1939, c. 177.
191. N. J., Laws, 1939, c. 320.
192. N. Y., Laws, 1939, c. 797, c. 869.
193. N. C., Laws, 1939, c. 320.

Similar bills failed of passage in twenty states.[194]

Amendments to existing laws relating to foods and drugs were enacted in Arkansas,[195] Georgia,[196] Missouri [197] and Oklahoma.[198]

Similar bills were killed in three states.[199]

A new law in Wyoming [200] prohibits the sale of adulterated and misbranded cosmetics.

A somewhat similar bill was killed in Pennsylvania.[201] An unsuccessful attempt was made in North Dakota [202] to amend the existing law relating to the sale and distribution of cosmetics.

An unsuccessful attempt was made in Michigan [203] to enact a new law relating to the manufacture, sale, distribution and advertising of foods.

IV. LEGISLATION RELATING TO LICENSES TO PRACTICE THE HEALING ART

A. Conditions Precedent to Licensure Imposed Alike on All Applicants, Nonsectarian or Cult

KNOWLEDGE OF THE BASIC SCIENCES.—Basic science laws were enacted in Florida [204] and South Dakota [205] which will require all applicants for licenses to practice any form of the healing art to demonstrate to a board of examiners a comprehensive knowledge of anatomy, chemistry, physiology, pathology and bacteriology before presenting themselves to their respective licensing boards for examination and licensure. The Florida board is to consist of five members learned in the basic sciences, selected from the faculties of the universities and colleges in Florida having four year college courses. On the other hand, the South Dakota board is to have a composite membership, one doctor of medicine, one osteopath, one chiropractor and two members who are to be full time professors or associate or assistant professors teaching the subject of the basic sciences in any university or college in the state accredited by the North Central Association of Secondary Schools and Colleges and who do not hold a degree in any of the healing arts.

Basic science bills were considered and killed in Georgia,[206] Missouri,[207] New Mexico,[208] North Dakota [209] and Rhode Island.[210]

A self-styled "basic science" bill was killed in South Dakota.[211] The bill was a basic science act in no reasonable sense of the term. It proposed to prohibit the medical board, the chiropractic board or the osteopathic board from admitting to examination any applicant who had not passed a satisfactory examination in the basic sciences named. However, instead of such applicants being examined by an impartial board in the subjects enumerated examinations in those subjects were to be given by the medical, chiropractic or osteopathic boards "to applicants for license in their respective professions."

194. Ark. H. 220; Calif. S. 317, S. 1215, S. 1208, A. 1131, A. 1177, A. 1147; Del. S. 79; Ga. H. 532; Fla. S. 624; Md. H. 250; Mass. H. 75; Mich. S. 460; Mo. H. 604; Mont. H. 101; N. M. S. 68; N. Y. S. 877, S. 1510, A. 279, S. 1424, A. 1927, A. 207, A. 1213; Okla. S. 219; Pa. H. 709, H. 1358; Tenn. H. 664, S. 499; Tex. H. 225; Utah S. 20; Wash. S. 15, S. 315; W. Va. S. 21; Wis. A. 785.
195. Ark., Acts, 1939, Act. 190.
196. Ga., Laws, 1939, Gov. No. 270.
197. Mo., Laws, 1939, c. ——, approved May 29, introduced as S. 13.
198. Okla., Laws, 1939, c. 24, Art. 4.
199. Calif. A. 1018; Mo. H. 349, H. 351, H. 352, H. 354, H. 662; N. Y. S. 1545, A. 2042, S. 1510.
200. Wyo., Laws, 1939, c. 20.
201. Pa. H. 728.
202. N. D. H. 261.
203. Mich. S. 225.
204. Fla., Laws, 1939, c. 19281.
205. S. D., Laws, 1939, c. 104.
206. Ga. S. 28.
207. Mo. S. 29.
208. N. M. H. 64.
209. N. D. H. 226.
210. R. I. S. 181.
211. S. D. H. 92.

An unsuccessful attempt was made so to amend the basic science act of Minnesota [212] as to permit certain chiropractors to receive a certificate of registration in the basic sciences on application to the board. The Wisconsin assembly also killed a bill [213] which proposed in effect that chiropractic applicants submitting to the basic science examination should be examined by chiropractors designated by the state board of examiners of chiropractic.

CENTRAL LICENSING AGENCY.—Unsuccessful attempts were made in Connecticut [214] and Maine [215] to create a central licensing agency to exercise all the powers and functions heretofore vested in the secretaries of the various licensing boards of the state, including the medical examining board, the osteopathic board, the chiropractic board, the dental board and others.

B. Changes in Medical Practice Acts Affecting Nonsectarian Practitioners

BOARDS OF MEDICAL EXAMINERS.—*Composite Membership.*—Legislation was enacted in Georgia [216] and Massachusetts [217] repealing provisions in prior laws which, in effect, required representation on the board for various schools of medical practice. By the new Georgia law the board is to consist of ten physicians of any school of medical practice. The prior law required five members of the board to be regular physicians, three to be eclectic physicians and two to be homeopathic physicians. The new Massachusetts law struck out the provision in the prior law that no more than three members of the board of registration in medicine should at any one time be members of any one chartered state medical society.

An unsuccessful attempt was made in Oklahoma [218] to strike out the provision in the present law which requires one member of the board of medical examiners to be a physiomedic physician. A bill was killed in Massachusetts [219] also to require that two members of the board of registration in medicine be osteopaths.

Right of State Medical Society to Nominate Members.—A new Oregon law [220] requires the Oregon State Medical Society on or prior to February 1 annually to nominate and certify to the governor the names of three qualified physicians to succeed the board member whose term expires that year. The governor, however, in making the required appointment is not restricted to the list so certified but may, if he so chooses, appoint any other physician "having the necessary qualifications." The law further provides that "present board members shall be deemed and taken to have been so certified by the said society."

Separate Eclectic Boards.—A bill was killed in Connecticut [221] which, if enacted, would have reestablished an eclectic board of medical examiners.

Board Meetings.—A new Alabama law [222] authorizes the board to fix the time at which examinations are to be held annually. The prior law required the board to give not less than two examinations annually. The new Oregon law [223] previously referred to also requires the board to hold meetings for the examination of applicants for licenses on the second Tuesday, Wednesday and Thursday in January and the third Tuesday, Wednesday and Thursday in June of each year in Portland and permits the board to hold special meetings for the examination of applicants for licenses in the same manner as other special meetings of the board are called.

Power to Reinstate Revoked License.—Laws adopted in New Jersey [224] and Oregon [225] permit the boards in question in their discretion to relicense without reexamination any person whose license to practice has been suspended or revoked.

Power to Regulate Conduct of Licentiates.—A new Delaware law [226] authorizes the medical council to promulgate regulations "for the proper supervision and control of the professional conduct of all persons under its jurisdiction."

Power to Issue Subpoenas and Administer Oaths.—The new New Jersey law [227] authorizes the secretary of the board, as well as the president, on whom alone the prior law conferred the powers to be referred to, (1) to issue subpoenas and (2) to administer oaths. A person refusing to appear in response to such a subpoena, or who, after appearing, refuses to be sworn or to testify is to be liable to a penalty of $50. A new Tennessee law [228] grants the president and secretary of the board in revocation or suspension proceedings power to administer oaths, issue subpoenas and to compel the attendance and testimony of witnesses.

CONDITIONS PRECEDENT TO LICENSURE.—*Educational Qualifications.*—Laws imposing educational qualifications in addition to those required by the prior laws on applicants for licenses to practice medicine were enacted in Ohio,[229] Oregon [230] and Texas.[231] The Ohio, Oregon and Texas laws, among other things, require, in effect, that applicants prior to their admission to medical school must have had at least two years premedical education in an approved college or university. The Oregon law provides, in addition, that an applicant must have graduated from a medical school or college on the approved list of the Council on Medical Education and Hospitals of the American Medical Association and must have completed an internship of at least one year in a hospital approved for internship training by the American Medical Association. The Texas law provides that an applicant must be a graduate of a bona fide reputable medical school which maintains a course of instruction of not less than four terms of eight months each, which offers courses of instruction in anatomy, physiology, chemistry, histology, pathology, bacteriology, diagnosis, surgery, obstetrics, gynecology, hygiene and medical jurisprudence and possesses and utilizes laboratories, equipment and facilities for proper instruction in all the subjects named. The Ohio law also requires applicants for licenses by reciprocity to possess the minimum educational qualifications exacted of applicants for licenses after examination.

The new New Jersey law [232] previously discussed also altered somewhat the educational qualifications required of applicants. Hereafter applicants must prior to the receipt of their professional diploma or degree have studied not less than four full school years, including four satisfactory courses of at least *eight* months

212. Minn. S. 683.
213. Wis. A. 227.
214. Conn. S. 305.
215. Me. H. 1645.
216. Ga., Laws, 1939, Gov. Act No. 261 (H. 190, a companion bill, was killed in the house).
217. Mass., Laws, 1939, c. 36.
218. Okla. H. 519.
219. Mass. H. 985.
220. Ore., Laws, 1939, c. 153.
221. Conn. H. 1009.
222. Ala., Laws, 1939, Gov. No. 122, introduced as H. 164.
223. Ore., Laws, 1939, c. 153.
224. N. J., Laws, 1939, c. 115.
225. Ore., Laws, 1939, c. 153.
226. Del., Laws, 1939, c. ——, approved March 8, introduced as S. 26.
227. N. J., Laws, 1939, c. 115.
228. Tenn., Laws, 1939, c. 66.
229. Ohio, Laws, 1939, p. ——, approved April 24, introduced as S. 97.
230. Ore., Laws, 1939, c. 153.
231. Tex., Laws, 1939, c. ——, approved March 15, introduced as H. 148.
232. N. J., Laws, 1939, c. 115.

(rather than *seven* months as the prior law required) in some school of medicine or osteopathy in good standing in the opinion of the board, "which courses shall have included a thorough and satisfactory course of instruction in medicine and surgery." The prior law also required an acceptable internship. The new law requires an internship "or in lieu thereof" completion of "one year of postgraduate work acceptable to the board in a school or hospital approved by the board." Before an applicant begins his internship training in New Jersey or the alternative postgraduate study the law now requires him to obtain from the board a certificate of qualification and to present that certificate when he applies for a license. This new law also permits a person licensed to practice osteopathy to be examined and licensed prior to Nov. 1, 1941, to practice medicine and surgery on showing completion of an internship *acceptable to the board* in a hospital approved by the board or the completion of a postgraduate course of two years *acceptable to the board* in a college of osteopathy approved by the board, the changes effected by the new law being indicated by the italicized phrases.

A new California law [233] so amends the prior medical practice act as to make no differentiation with respect to the requirements for licensure between graduates of Canadian medical schools approved by the board of medical examiners and graduates of approved American medical schools.

A bill was killed in Missouri [234] to require applicants, in addition to existing educational qualifications, to have completed a premedical education consisting of a minimum of sixty semester hours of college credit in acceptable subjects from a reputable college or university approved by the board.

Citizenship Requirements.—Laws were adopted in Arkansas,[235] Georgia,[236] New Hampshire,[237] New Jersey [238] and Texas [239] restricting licensure in medicine to citizens of the United States. A similar bill would have become law in California but for the pocket veto of the governor.[240]

Similar bills were considered and killed in Colorado [241] Connecticut,[242] Illinois [243] and New York.[244]

Laws were enacted in Illinois,[245] Massachusetts [246] and New Mexico [247] restricting licensure in medicine to citizens of the United States or to persons who have legally declared their intention of becoming such citizens.

A similar bill was killed in Massachusetts.[248]

In codifying the statutes of South Dakota, the code commissioners added to the provision of the medical practice act requiring an applicant to be a citizen of the United States a qualifying phrase "or a person who has declared his intention to become a citizen." The code as so worded was adopted by the legislature.[249]

Examination.—Laws were enacted in New Jersey and Texas relating to the examination to be given applicants for licenses to practice medicine. The New Jersey law [250] changes the provisions of the prior law listing the subjects in which applicants are examined, substituting "pharmacology" for "materia medica" and "diagnosis, including diseases of the skin, nose and throat" for "practice of medicine, including diseases of the skin, nose and throat." The Texas law [251] eliminates provisions in the prior law which permitted the examination to be taken in a language other than English. The new Texas law also requires applicants for a license by reciprocity to pass an oral examination "in practical subjects as may be prescribed by the board." The new New Jersey law also provides a fee for reexamination of $25, the prior law not providing a fee for reexamination.

Licensure Without Examination.—Laws were enacted in New Jersey [252] and Ohio [253] permitting the licensing without examination of diplomates of the National Board of Medical Examiners. The provisions of the Texas medical practice act permitting the licensing without examination of applicants licensed in other states was so amended this year as to limit such licensure to citizens of the United States and to licentiates of other states which accord a similar privilege to Texas licentiates. The new Texas law also (1) provides that such applicants must pass an oral examination in practical subjects prescribed by the board and (2) prohibits the issuance of a license by reciprocity to an applicant who does not hold a license from another jurisdiction giving him the same right to practice medicine in that jurisdiction as a license to practice medicine in Texas gives to persons licensed to practice medicine in Texas. A new Arkansas law [254] permits the board to license without examination any honorably discharged medical officer of the United States Army, Navy or public health service, who has been licensed to practice in some other state of the union after examination, who has qualified under the basic science act of Arkansas, who has been a resident of the state for one year or more and who is a citizen of the United States.

REVOCATION, SUSPENSION OR REFUSAL OF LICENSES.—*Right to Suspend.*—A new Delaware law [255] authorizes the medical council to suspend, as well as to refuse to issue or revoke licenses to practice. So far as specific language is concerned, the prior law limited the council's authority in this respect to refusing to license or to revoking a license.

Causes.—Laws setting out grounds for the suspension, revocation or refusal of licenses, in addition to the causes or grounds stated in prior medical practice acts, were enacted in Arkansas, California, Delaware, New Jersey, Oregon and Texas. The new Arkansas law [256] authorizes the board to refuse to grant or to revoke a license if the applicant or the holder is not an American citizen. The new California law [257] makes it unprofessional conduct, which is a cause for revocation or suspension, for a licentiate knowingly to sign any certificate or other document required by law which falsely represents the existence or nonexistence

233. Calif., Laws, 1939, c. 281.
234. Mo. H. 462.
235. Ark., Laws, 1939, c. 342.
236. Ga., Laws, 1939, Gov. Act No. 238, introduced as S. 29.
237. N. H., Laws, 1939, c. ——, approved May 24, introduced as S. 30.
238. N. J., Laws, 1939, c. 115.
239. Tex., Laws, 1939, c. ——, approved March 15, introduced as H. 148.
240. Calif. A. 449.
241. Colo. S. 332, H. 481.
242. Conn. H. 1618.
243. Ill. H. 612, S. 241.
244. N. Y. A. 801, S. 1492.
245. Ill., Laws, 1939, p. ——, approved July 12, introduced as S. 365.
246. Mass., Laws, 1939, c. 415.
247. N. M., Laws, 1939, c. ——, approved March 9, introduced as H. 42.
248. Mass. S. 558.
249. S. D. Code of 1939, sec. 27.0301.
250. N. J., Laws, 1939, c. 115.
251. Tex., Laws, 1939, c. ——, approved March 15, introduced as H. 148 (a companion bill, S. 74, was killed in the senate).
252. N. J., Laws, 1939, c. 115.
253. Ohio, Laws, 1939, c. ——, approved April 24, introduced as S. 97.
254. Ark., Laws, 1939, Act 161.
255. Del., Laws, 1939, c. ——, approved March 8, introduced as S. 26.
256. Ark., Laws, 1939, c. 342.
257. Calif., Laws, 1939, c. 342.

of a state of facts. The Delaware law [258] makes the following additional grounds for the refusal to license or for the suspension or revocation of a license: (*a*) chronic drug addiction or (*b*) violation of regulations adopted by the medical council for the supervision and control of professional conduct. The New Jersey law [259] sets forth the following as additional causes for disciplinary action: (*a*) adjudication of insanity; (*b*) habitual use of drugs or intoxicants; (*c*) fraudulent advertising; (*d*) employing unlicensed persons to perform work which can legally be done only by persons licensed to practice medicine in the state; (*e*) conviction of a violation of any federal or state law relating to narcotic drugs. The additional grounds set out by the new Oregon law [260] consist of (*a*) "such conduct as would not be indulged in by an ethical physician and surgeon under all the circumstances, taking into consideration the good of the patient and public, the time and place"; (*b*) making false or misleading statements regarding the licentiate's skill or the value of his medicine, treatment or remedy in the treatment of any disease or other abnormal condition of the human mind or body, or (*c*) advertising or holding one's self out to treat diseases or other abnormal conditions of the human body by any secret formula, medicine, method, treatment or procedure. Several additional grounds are set out in the new Texas law,[261] among them being (*a*) the use of any advertising statement of a character tending to mislead or deceive the public; (*b*) advertising professional superiority, or the performance of professional service in a superior manner; and (*c*) employing directly or indirectly any person whose license to practice has been suspended, or association in the practice of medicine with any person whose license to practice has been suspended or any person who has been convicted of the unlawful practice of medicine in Texas or elsewhere.

Unsuccessful attempts were made in four states to provide grounds for the revocation or suspension of licenses, in addition to the grounds now stated in present medical practice acts.[262]

Procedure.—Laws relating to the procedure to be followed in revocation or suspension proceedings were adopted in five states. A new Delaware law [263] permits the medical council to act on its own motion as well as on complaints in writing made to it. A New Jersey law [264] provides that in such proceedings against a licentiate because of the licentiate's conviction of a crime involving moral turpitude or of violating any federal or state law relating to narcotic drugs, the accused physician need not be furnished with a copy of the complaint nor need he be given a hearing. A new Oregon law [265] specifies in detail the procedure the board must follow in revoking or suspending a license. In brief, the law requires that before the board can institute proceedings there must be filed with it a complaint under oath setting forth the facts on which the charge is based, which complaint must be filed not later than three years after the commission of the acts complained of. The board must then serve on the accused physician a written notice, stating the time and place of the hearing on those charges, together with a copy of the complaint. At the hearing, the accused and his attorney shall have ample opportunity to present a defense, including the right to subpoena witnesses and necessary documents, and a stenographic report of the proceedings must be made. The practice in such proceedings must conform as nearly as practicable to equity suits. In Tennessee a law was enacted [266] which provides that in such proceedings the affected licentiate must be given fifteen days' notice to prepare for a hearing and at the hearing he is entitled to be heard in person or by counsel or both. The board is given the power to make all needed procedural rules for such hearings and to employ an attorney to represent it. In Texas a new law [267] amends the corresponding provisions of the prior law so as to provide that in instituting a disciplinary proceeding the appropriate district or county attorney, whom the law authorizes to prosecute such proceedings, must file with the appropriate court a complaint in writing, stating the grounds of the proceeding and signed officially by the prosecuting official instituting it.

Unsuccessful attempts were made in Arkansas,[268] California [269] and Oklahoma [270] to amend the provisions of the medical practice acts relating to the procedure to be followed in revocation proceedings or appeals therefrom. Of most interest is one of the Oklahoma bills,[271] which proposed that a licentiate appealing from an order of revocation or suspension might appeal to the district court of the county of his residence, which was to try the case de novo, and that no decision of the board's revoking or suspending a license should become final "pending final decision of the Supreme Court of this State."

Annual Registration.—Unsuccessful attempts were made in Indiana,[272] Massachusetts,[273] Missouri [274] and Oklahoma [275] to require the annual registration of physicians and the payment of an annual registration fee. An unsuccessful attempt was made in Utah [276] to raise to $10 the annual license renewal fee required of physicians and surgeons, osteopaths, chiropractors and dentists.

Recording of Licenses.—The Wisconsin law requiring a licensed physician to record his license with the county clerk of the county in which he resides was so amended this year [277] as to require nonresident physicians to file their Wisconsin licenses with the county clerk in each county in which they practice.

Posting of Names at Entrance to Office.—A new New Jersey law [278] requires every person practicing medicine under a firm name and every person practicing medicine as an employee of another to cause his name to be conspicuously displayed and kept in a conspicuous place at the entrance of the place where such practice is conducted. Failure to comply with this requirement subjects the offender to a penalty of $100.

Interns and Resident Physicians.—A new Idaho law [279] permits "students who have had training in recognized medical colleges in good standing and who are performing the duties of an intern in . . . any duly organized hospital . . . operating under the supervision of a medical staff" freely to perform their

258. Del., Laws, 1939, c. ——, approved March 8, introduced as S. 26.
259. N. J., Laws, 1939, c. 115.
260. Ore., Laws, 1939, c. 153.
261. Tex., Laws, 1939, c. ——, approved March 15, introduced as H. 148.
262. Calif. A. 438; Iowa H. 543; N. Y. A. 737, A. 756; Okla. H. 519.
263. Del., Laws, 1939, c. ——, approved March 8, introduced as S. 26.
264. N. J., Laws, 1939, c. 115.
265. Ore., Laws, 1939, c. 153.
266. Tenn., Laws, 1939, c. 66.
267. Tex., Laws, 1939, c. ——, approved March 15, introduced as H. 148.
268. Ark. S. 308.
269. Calif. A. 2745.
270. Okla. H. 519, S. 101.
271. Okla. H. 519.
272. Ind. H. 471.
273. Mass. H. 60.
274. Mo. H. 500.
275. Okla. H. 496.
276. Utah H. 198.
277. Wis., Laws, 1939, c. 184.
278. N. J., Laws, 1939, c. 115.
279. Ida., Laws, 1939, c. 52.

duties without an examination or the issuance of a license to practice medicine. An amendment adopted to the California medical practice act this year [280] authorizes any graduate student registered with the board of medical examiners and on whom a degree of Doctor of Medicine, Bachelor of Medicine, or Doctor of Osteopathy has been conferred and any regularly matriculated student in a school approved by the board to register with the board and to be permitted for a period not to exceed two years to treat the sick and afflicted either as a student in the school or as an intern in a hospital approved for the training of interns. Such persons so registered may for rendering treatment receive compensation from the hospital or school concerned. Except as authorized by this amendment, no graduate student may treat the sick or afflicted or receive compensation therefor. A new New Jersey law [281] limits the exemption from the medical practice act accorded to members of the resident staffs of charitable or municipal hospitals or asylums by providing that the exemption shall not apply with respect to an individual after he has served as a resident physician for a total period of two years and that the exemption applies only with respect to an individual who has received from the board a certificate of qualification prior to serving in such capacity.

A bill was killed in Maryland [282] proposing that any person shall be regarded as practicing medicine who receives compensation from the state for the treatment of patients in private or public mental hospitals, including resident or assistant resident physicians.

ACTS CONSTITUTING THE PRACTICE OF MEDICINE.—A new Texas law [283] provides that the medical practice act is to apply to persons, other than registered pharmacists not pretending to be physicians, who offer for sale in public places contraceptives, prophylactics or remedies which they recommend for the cure of disease.

A bill, killed in Iowa,[284] proposed that any person, firm, association or corporation acting in any manner as an agency for bringing a licentiate and patient together or unlawfully employing, arranging with or by subterfuge procuring the services of a licensed practitioner shall be deemed to be practicing medicine, osteopathy, chiropractic, dentistry, optometry or podiatry, as the case might be, without a license. The Maryland legislature, as previously noted, killed a bill [285] which proposed that any person should be regarded as practicing medicine who should receive compensation from the state for the treatment of patients in private or public mental hospitals, including resident or assistant resident physicians. An unsuccessful attempt was made in Massachusetts [286] to provide that the term "practice of medicine" or "rendering medical service," as used in the medical practice act, should include "any examination or treatment of a human being, by the use or disuse of any means, for the purpose of diagnosing, preventing or curing any deviation from normal condition of mind or body, or for the purpose of relieving any condition of mind or body whether arising from such a deviation or otherwise." A bill was likewise killed in Nevada [287] to make it unlawful for any person to practice medicine, surgery, *anesthesia* or obstetrics without being licensed by the board of medical examiners. The present law does not specifically prohibit the practice of anesthesia by persons not licensed by the board of medical examiners. An effort failed in Texas [288] to make it unlawful for any person other than a licensed physician to offer for sale any truss or other mechanical device commonly used for the relief of rupture or hernia except on the written prescription of a licensed physician. The bill also proposed to make it unlawful for any person other than a licensed physician to offer to fit any such truss or mechanical device. A bill died in the senate of Washington [289] to make it unlawful for any person operating a bathhouse, massage parlors or similar establishments to furnish by himself or by an agent any bath, massage or other treatment or to attempt to treat any disease, injury or condition of health, unless the person so doing is licensed to practice one of the healing arts authorized by the laws of the state.

A bill was killed in Connecticut [290] to prohibit the sale of any arch support, braces or other foot and leg appliances except on the prescription of an orthopedic surgeon or of the state health commissioner. An unsuccessful attempt was made in Missouri [291] to prohibit the sale, prescribing or fitting of any hearing aid device except by a licensed physician or on his prescription.

PERSONS OR ACTS EXCEPTED FROM THE PROVISIONS OF THE MEDICAL PRACTICE ACT.—*Christian Scientists.*—The provisions of the Texas medical practice act providing that nothing therein shall "effect or limit in any way the application or use of the principles, tenets or teachings of any church in the ministration to the sick or suffering by prayer without the use of any drug or material remedy, provided sanitary and quarantine laws and regulations are complied with" *and that no charge is made therefor, directly or indirectly* was amended this year [292] by (1) eliminating the phrase italicized and (2) by adding the following phrase "and provided, further, that all those so ministering or offering to minister to the sick or suffering by prayer shall refrain from maintaining offices, except for the purpose of exercising the principles, tenets, or teachings of the church of which they are bona fide members." The effect of this amendment would seem to be to permit such practitioners legally to charge for their services.

Unsuccessful attempts were made in Ohio [293] and West Virginia [294] to provide that the provisions of the medical practice act should not be construed to apply to the practice of Christian science, provided that the laws, rules and regulations relating to communicable diseases and sanitary matters were not violated.

General.—The provisions of the New Jersey medical practice act which exempted therefrom a commissioned surgeon or physician of the United States Army, Navy or Marine hospital service were so amended this year [295] as to require a person claiming such an exemption to be actively engaged in the performance of his official duties and by stating specifically that this exemption does not apply to reserve officers or national guard officers. This law also specifically exempts "a graduate physiotherapist . . . electro-therapist, or hydro-therapist, while operating in each particular case under the specific direction of a regularly licensed physician or surgeon. This exemption shall not apply to such assistants of persons who are licensed as osteopaths, chiropractors, optometrists or other practitioners holding limited licenses." Additional provisions of this law which place restrictions and limits on the exemption granted in favor of resident physicians have previously been noted.

280. Calif., Laws, 1939, c. 341.
281. N. J., Laws, 1939, c. 115.
282. Md. H. 754.
283. Tex., Laws, 1939, c. ——, approved March 15, introduced as H. 148 (a companion bill S. 74 was killed in the senate).
284. Iowa H. 543.
285. Md. H. 754.
286. Mass. S. 258.
287. Nev. S. 70.
288. Tex. H. 897.
289. Wash. S. 41.
290. Conn. S. 780.
291. Mo. H. 182.
292. Tex., Laws, 1939, c. ——, approved March 15, introduced as H. 148. Other bills proposing to accomplish approximately the same purpose were also before the Texas legislature (S. 26, H. 10, S. 74) but were not enacted.
293. Ohio H. 392.
294. W. Va. S. 132.
295. N. J., Laws, 1939, c. 115.

Interns.—There has been previous discussion with respect to the exemptions granted interns by laws enacted in California, Idaho and New Jersey.

Alien Physicians.—Two bills were withdrawn from the consideration of the Wisconsin legislature [296] which proposed a method by which "fifty medical physicians who may have been engaged in the actual practice of medicine or surgery in Germany, Austria, Czechoslovakia or Poland" might be permitted to practice in the state without conforming to the requirements of the medical practice act.

ENFORCEMENT PROVISIONS.—*Use of the Injunctive Process.*—A new New Jersey law [297] authorizes the court of chancery at the suit of the Attorney General or of the board of medical examiners to restrain the unlicensed practice of medicine and various other violations of the medical practice act.

Bills to permit courts to enjoin the unlicensed practice of medicine failed of enactment in California,[298] Missouri,[299] New York [300] and North Dakota.[301]

Penalties.—Laws amending the penalty provisions of medical practice acts were enacted in Arizona, New Jersey, Oregon and Texas. The Arizona law [302] makes it a felony to practice or attempt to practice medicine without having a valid recorded license so to practice issued by the state board of medical examiners. The prior law made it a felony to practice or attempt to practice without having a valid recorded certificate. The New Jersey law [303] authorizes the imposition on a person convicted for the second time of violating the medical practice act of a penalty of $500. If a defendant so convicted fails to pay the penalty, the court is authorized to commit him to jail for not less than thirty days nor more than two hundred days. The new Oregon law [304] makes it mandatory on the court to sentence a defendant, convicted for the second or subsequent time of a misdemeanor under the medical practice act, to the county jail for not less than ten days, in addition to whatever other fine or imprisonment is permitted by the medical practice act. The new Texas law [305] reduces to thirty days the maximum imprisonment that can be imposed on a person convicted of practicing medicine without a license. As the law now reads, a person convicted of practicing without a license is guilty of a misdemeanor and is to be punished by a fine of not less than $50 nor more than $500 and by imprisonment in the county jail for not more than thirty days.

An unsuccessful attempt was made in New Jersey [306] to increase the penalty to be imposed on persons convicted of practicing without a license.

Miscellaneous.—Among other things, the amendments to the Texas medical practice act enacted this year,[307] referred to in several connections heretofore, eliminated the provisions in the prior law that permitted the board to license applicants to practice obstetrics alone. By a new Ohio law [308] the fines collected for violations of the medical practice act are to be distributed one half to the board of medical examiners and one half to the county or municipality in which the offense was committed.

A bill was killed in Arkansas [309] to make it unlawful for a physician to practice under any name except his own true name or to operate, treat, practice, manage or be employed in any room, office, hospital or clinic where medical treatment is administered or done under the name of any unlicensed person, corporation, company, association or trade name; or to assist or aid in any manner any unlicensed person to practice medicine.

C. Changes in Cult Licensing Laws

OSTEOPATHS.—Amendments were adopted this year in Delaware, Florida, Maine, New Jersey, New York, Oklahoma and Tennessee to the laws relating to the practice of osteopathy in force in those states.

Probably most important is the new Tennessee law,[310] which extensively amended the prior osteopathic practice act and which without doubt grants to osteopaths now licensed and to be licensed in the future the right to practice medicine and surgery without restriction. Specifically, the new law states that a license to practice osteopathy shall entitle the holder thereof "to practice osteopathy in any county in this state, in all its branches, as taught and practiced by the recognized associated colleges of osteopathy, with the right to use such drugs as are necessary in the practice of osteopathy, surgery, and obstetrics, including narcotics, antiseptics, anesthetics, and biologicals." The law further provides that osteopaths shall observe and be subject to all state and municipal regulations relating to the control of contagious diseases, the reporting and certifying of births and deaths and all matters pertaining to public health, and such reports must be accepted by the officer or department to whom they are made, equally with the reports of physicians of any other school of medicine.

The new New York law [311] provides that any licensed osteopath or any applicant for such a license "who upon the submission of proper credentials or by examination satisfies the regents that he has received sufficient instruction and training, may be granted the right to use instruments for minor surgical procedures and to use anesthetics, antiseptics, narcotics and biological products."

The new Delaware law provides that (1) osteopathic applicants are to be examined by the medical council and an osteopath designated by the Delaware State Osteopathic Society; (2) such applicants must be examined in the subjects enumerated in the prior law and in addition "Therapeutics"; and (3) such applicants must present evidence, in addition to the qualifications as now required by law, that they have completed two years of acceptable college work, including English, physics, chemistry and biology, and have served as interns for one year in hospitals recognized by the American Osteopathic Association or by the American Medical Association.[312]

The new Florida law [313] requires licensed osteopaths to register annually on or before January 1 with the osteopathic board and at that time to pay annual registration fees of $5 and to condition the renewal of a license to practice osteopathy on the presentation by the holder thereof of evidence that in the preceding year the licentiate has attended the two day educational program as conducted by the Florida osteopathic association, or its equivalent as approved by the board of osteopathic examiners.

296. Wis. S. 239, A. 692.
297. N. J., Laws, 1939, c. 115.
298. Calif. A. 484.
299. Mo. H. 548.
300. N. Y. S. 180, A. 260.
301. N. D. S. 194.
302. Ariz., Laws, 1939, c. 74.
303. N. J., Laws, 1939, c. 115.
304. Ore., Laws, 1939, c. 153.
305. Tex., Laws, 1939, c. ——, approved March 15, introduced as H. 148.
306. N. J. S. 167.
307. Tex., Laws, 1939, c. ——, approved March 15, introduced as H. 148.
308. Ohio, Laws, 1939, c. ——, approved April 24, introduced as S. 97.
309. Ark. S. 463.
310. Tenn., Public Acts, 1939, c. 180.
311. N. Y., Laws, 1939, c. 741.
312. Del., Laws, 1939, c. ——, approved March 3, introduced as H. 54.
313. Fla., Laws, 1939, c. 19066.

The new Maine law [314] requires osteopaths to renew their licenses annually and to pay an annual renewal fee of $2 and to condition annual renewal on the presentation to the board by each licentiate of satisfactory evidence that he has attended at least two days of the annual educational program conducted by the state osteopathic association, or its equivalent, to the approval of the board in the preceding year.

One new New Jersey law [315] defines osteopathy to "include the diagnosing, treating, operating or prescribing for any human disease, pain, injury, deformity, mental or physical condition; provided, however, that a license to practice osteopathy shall not permit the holder thereof to prescribe, administer or dispense drugs for internal use in the treatment of any human ailment, disease, pain, injury, deformity, mental or physical condition or to perform such surgical operations as require cutting." Another new New Jersey law [316] provides that any person holding a valid license to practice osteopathy within the state shall be authorized to continue to practice osteopathy, as just defined, pursuant to said license, as though the act under which said license had been issued had not been repealed. The latter law apparently was necessary because the extensive amendments to the medical practice act adopted in 1937, which eventually will confer on osteopaths the right to practice medicine and surgery without restriction, left in doubt the right of osteopaths licensed in the past to continue to practice osteopathy in the limited form just noted.

The new Oklahoma law [317] requires licensed osteopaths to register annually with the state board of osteopathic examiners, to pay annual licensing fees of $2 and to condition the renewal of such a license on the submission of proof that the licentiate has attended at least two days of the annual educational program conducted by the Oklahoma State Osteopathic Association in the year preceding application for renewal.

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Two unsuccessful attempts were made in Illinois [318] to enact a separate osteopathic practice act and to create an independent examining committee to examine and license persons to practice osteopathy, which the bills proposed to define as "a system of practice of the healing arts in all its branches with therapeutics majoring in manipulation." Unsuccessful attempts were made in eleven states to amend existing laws relating to the practice of osteopathy.[319] Bills rejected in Kansas, if enacted, would have granted a licensed osteopath the right to practice osteopathy in all its branches, which, the bill stated, includes "operative surgery with instruments, physiotherapy and the use of drugs, as taught and practiced in the legally incorporated colleges of osteopathy of good repute, and the right to register under the laws of the United States of America governing narcotics." The Connecticut and Oregon bills proposed to extend the scope of a license to practice osteopathy by permitting a licentiate to practice osteopathy as taught in the branches and embraced in the subjects covered by the examinations provided by the bills, which might have indicated that a licentiate could practice surgery and obstetrics. In addition, the Oregon bill proposed to deprive the board of medical examiners of their present jurisdiction in examining and licensing osteopaths and would have established an independent board of osteopathic examiners. The Ohio and South Dakota bills specifically would have permitted the examining boards to license osteopaths to practice surgery.

CHIROPRACTORS.—Amendments to laws regulating the practice of chiropractic were adopted in Connecticut,[320] Delaware,[321] Georgia,[322] New Hampshire,[323] New Jersey,[324] South Dakota,[325] Tennessee [326] and Wyoming.[327] Of greatest interest is the new New Jersey law, which repealed all provisions in the prior law which permitted the issuance of limited licenses to chiropractors. Until July 31, 1944, persons graduating from chiropractic schools subsequent to 1921 may be licensed to practice chiropractic, which is defined as "the detecting and adjusting, by hand only, of vertebral subluxations." Thereafter chiropractic applicants must possess the same educational qualifications as physicians and surgeons and will receive identical licenses. Until Jan. 1, 1940, persons graduating from chiropractic schools prior to 1921 may be licensed to practice chiropractic as just defined.

The new Connecticut and Georgia laws require chiropractors to renew their licenses annually with the board and condition that renewal on attendance at at least one of the two day "educational" programs conducted by the state chiropractic association during the preceding year. In addition, the Georgia bill requires applicants for licenses to practice chiropractic to have graduated from chiropractic schools, which require for graduation a period of active attendance equivalent to a standard four year college course instead of the past requirement that such applicants have graduated from chiropractic schools requiring a course of three years of six months each. The new Delaware law amends the prior chiropractic act so as to authorize the board of chiropractic examiners to refuse to issue or to reissue a license for any of the following causes: material misrepresentation of facts in applications to practice; chronic and persistent inebriety or chronic drug addiction; the practice of criminal abortion; public advertising of special ability to cure chronic incurable diseases; and the presentation to the board of examiners of licenses that had been illegally obtained or have been signed or issued unlawfully or under fraudulent representation. The Delaware law also prohibits the issuance of an occupational license by the state for the practice of chiropractic unless the applicant has first procured from the board of examiners a certificate required by the chiropractic practice act. The new New Hampshire law limits licensure to citizens of the United States or of a Canadian province in which a like privilege is granted to citizens of the United States.

The new South Dakota law (1) provides that the practice of chiropractic "shall be limited to the methods of practice as taught in the standard colleges of chiropractic recognized by the state board of chiropractic examiners," thus replacing provisions in the prior law which limited the practice of chiropractic to "the adjustment by hand of the articulations of the human spine and other incidental adjustments according to the science of chiropractic" and specifically prohibited chiropractors from practicing obstetrics or treating contagious or infectious diseases; (2) requires chiropractic applicants to be examined in anatomy, bacteriology, physiology, chemistry, pathology, histology, gynecology, symptomatology, hygiene and public health, diagnostic x-ray and principles and practice of

314. Me., Public Laws, 1939, c. 206.
315. N. J., Laws, 1939, c. 115.
316. N. J., Laws, 1939, c. 361.
317. Okla., Laws, 1939, p. ——, approved May 12, introduced as H. 638.
318. Ill. S. 292, H. 293.
319. Conn. S. 931; Ga. S. 139; Fla. S. 211; Ida. S. 144; Kan. H. 147, S. 171, S. 464; Mo. H. 111, H. 658; Neb. Bill 392, Bill 181; Ohio H. 72; Ore. S. 475; S. D. H. 24; Wis. S. 192, S. 183.
320. Conn., Laws, 1939, c. 195.
321. Del., Laws, 1939, c. ——, approved May 1, introduced as S. 269.
322. Ga., Laws, 1939, Gov. Act No. 253, introduced as S. 117.
323. N. H., Laws, 1939, c. 139.
324. N. J., Laws, 1939, c. 115.
325. S. D., Laws, 1939, c. 101.
326. Tenn., Public Acts, 1939, c. 116.
327. Wyo., Laws, 1939, c. 54.

chiropractic, and (3) requires an applicant to have acquired a high school education and to be a graduate of an approved chiropractic school, which requires for graduation a period of actual attendance equivalent to the standard four year college course, teaching adequate courses in the basic sciences and all subjects pertaining to the practice of chiropractic.

The new Tennessee law [328] (1) makes eligible for examination and licensure any applicant who is of good moral character, who has a preliminary school education equal to that of a standard accredited high school and who is a graduate of a school of chiropractic giving adequate courses in anatomy, physiology, symptomatology, spinal analysis, hygiene, sanitation, principles and practice of chiropractic and requiring actual attendance of three school years of not less than nine months each, or 3,600 hours of actual class attendance; (2) raises the examination fee to $25 from $15, and (3) sets out causes for the revocation, suspension or refusal of licenses.

The new Wyoming law [329] requires applicants for licenses to practice chiropractic to be graduates of recognized schools of chiropractic in which they have actually attended a course of study for at least four years of nine months each, preceded by a four year high school course or its equivalent.

Bills were killed in Illinois,[330] Massachusetts,[331] New Jersey,[332] New York [333] and Pennsylvania [334] to enact separate chiropractic practice acts and create independent chiropractic examining boards.

Unsuccessful attempts were made in six states [335] to amend existing chiropractic practice acts. The Iowa, Nebraska and Rhode Island bills, if enacted, would have extended the scope of a license to practice osteopathy.

An unsuccessful attempt was made in New Jersey [336] to permit a particular chiropractor to be examined in physiotherapy and dietetics and thus to secure a license to practice physiotherapy and dietetics.

An unsuccessful attempt was also made in Washington [337] to create a self-styled "Washington State Chiropractors' Association," which was to operate as an agency of the state and was to be composed of all persons licensed to practice chiropractic in the state. The association apparently was to have the power to fix the qualifications, requirements and procedure for admission to the practice of chiropractic and to establish and enforce rules of professional conduct for its members.

NATUROPATHS.—Amendments to existing naturopathic practice acts were enacted in Connecticut [338] and Utah.[339] The new Connecticut law defines the practice of naturopathy as "the practice of the psychological, mechanical and material sciences of healing as follows: The psychological sciences, such as psycho-therapy; the mechanical sciences, such as mechano-therapy, articular manipulation, corrective and orthopedic gymnastics, neuro-therapy, physio-therapy, hydro-therapy, electro-therapy, thermo-therapy, photo-therapy, chromo-therapy, vibro-therapy, concussion and pneumato-therapy, and the material sciences, such as dietetics, and external applications; but shall not mean internal medication or the administering of any substance simulating medicine or the form of medicine, except dehydrated foods."

The new Utah law requires an applicant for a license to practice naturopathy to be a graduate of a legally chartered naturopathic college, in good standing at the time of his graduation, which requires as a prerequisite to graduation at least a four years residence course of instruction over a period of four schools years of not less than eight and one-half months of actual school attendance and study in each of such school years, comprising at least 4,500 hours in class work in the subjects required in such school, and in addition such an applicant must be a graduate from a high school requiring an attendance through four school years equal to fifteen units and have completed one year of college work in a college of liberal arts approved by the department of registration. In addition, each applicant must have a course of training of not less than twelve months in a hospital approved by the board of naturopathic physicians or a course of training for a period of twelve months in the office of a licensed naturopath in the state.

Unsuccessful attempts were made in fourteen states [340] to enact separate naturopathic practice acts and to create independent boards of naturopathic examiners to examine and license applicants for licenses to practice naturopathy.

Unsuccessful attempts were made to amend the naturopathic practice act of four states.[341] Bills in three of these states (Florida, Oregon and Utah), if enacted, would have enlarged the scope of a license to practice naturopathy in those states.

An attempt was made again this year in Connecticut,[342] which was unsuccessful as in the past, to create certain stated persons a body politic and incorporate by the name of The College of Natureopathic Physicians. The object of the corporation was to be the instruction in the principles, practice and theory of naturopathy and the corporation, it was proposed, was to have the right to establish and maintain hospitals, sanatoriums, infirmaries and clinics and also to award the degree of Doctor of Natureopathy.

An unsuccessful attempt was made so to amend the medical practice act of New Jersey [343] as to authorize the issuance of licenses to naturopaths and to provide that two members of the board of medical examiners be naturopaths.

MASSAGE.—Unsuccessful attempts were made in two states [344] to enact separate massage practice acts and to create independent boards to examine and license persons applying for licenses to practice massage.

FAITH HEALERS.—Reference has previously been made on page 885 of the survey concerning legislation enacted and proposed this year relating to faith healers.

SANIPRACTORS.—An unsuccessful attempt was made in Washington [345] to enact a separate sanipractic practice act and to establish a sanipractic physicians' examining board, to examine and license persons to practice sanipractic. The bill proposed the following definition for sanipractic: "the science and art of applied prophylactic and therapeutic sanitation, which enables the physician to direct, advise, prescribe or apply food, water, roots, herbs, light, heat, exercises active and passive, manipulation, adjusting tissue, vital organs and anatomical structure by manual, mechanical or electrical instruments or appliances; or other natural agency, to assist nature restore a psychological and physiological interfunction for the purpose of maintaining a normal state of health in mind and body." The bill went on to state that the foregoing definition was copyrighted in 1919 for the purpose of protecting a separate and coordinate principle of healing.

DRUGLESS THERAPY—NATURAL HEALING ARTS.—Bills proposing to enact separate practice acts for drugless therapists,

328. Tenn., Public Acts, 1939, c. 116 (a companion bill, S. 255, died in the senate).
329. Wyo. Laws, 1939, c. 54.
330. Ill. H. 282.
331. Mass. H. 2151.
332. N. J. S. 205, A. 459.
333. N. Y. A. 794.
334. Pa. H. 786.
335. Colo. S. 675, H. 993, H. 1000; Iowa H. 120, H. 364, H. 431; Kan. H. 259; Neb. Bill 444; Okla. H. 624; R. I. S. 160.
336. N. J. A 493.
337. Wash. S. 322.
338. Conn., Laws, 1939, c. 247.
339. Utah, Laws, 1939, c. ——, approved Feb. 27, introduced as S. 34.
340. Calif. A. 1203; Ga. H. 47; Ill. H. 327; Kan. H. 44; Md. S. 85; Mich. S. 269; N. M. S. 8; N. C. S. 336; N. D. H. 287; Okla. H. 329; R. I. S. 198; Tenn. H. 392, S. 635; Tex. H. 312; Wyo. H. 167.
341. Ariz. S. 165; Fla. H. 392; Ore. S. 435; Utah S. 33.
342. Conn. H. 845.
343. N. J. A. 296.
344. Conn. S. 168; Fla. H. 384.
345. Wash. S. 263.

drugless practitioners and practitioners of the natural healing arts and to create independent examining and licensing boards were killed in Illinois,[346] Indiana [347] and Pennsylvania [348] respectively.

PHYSIOTHERAPY.—Unsuccessful attempts were made in three states [349] to enact a separate physiotherapy practice act and to create an independent board of examiners to examine and license persons desiring to practice physiotherapy. Somewhat similar was the proposal killed in Florida [350] to enact a massage practice act and to establish an independent board of examiners to examine and license persons desiring to practice massage, which the bill stated was to be permitted to employ, among other agencies, phytotherapy, dietetics, psychotherapy, suggestotherapy, hydrotherapy, zone therapy, biochemistry, external applications, electrotherapy, mechanotherapy, mechanical and electrical appliances, hygiene, first aid, sanitation, heliotherapy, spinal manipulation and manual bodily manipulation.

An unsuccessful attempt was made in New York [351] to supplement the medical practice act by enacting a series of provisions with respect to the practice of physiotherapy and to provide a means whereby persons may be licensed to practice physiotherapy.

346. Ill. H. 876.
347. Ind. H. 276.
348. Pa. H. 565.
349. Conn. S. 168; Ill. S. 390, H. 1068; Okla. S. 104.
350. Fla. H. 384.
351. N. Y. S. 965.

PSYCHOLOGISTS.—Bills were killed in Illinois [352] and Kansas [353] to enact what in effect were separate psychology practice acts and to create boards of examiners for psychologists. The bills proposed to prohibit any person from practicing as a consulting psychologist without a certificate of registration or a license from the examining board. Apparently no doctor of medicine would have been entitled to receive such a license unless he possessed the degree of doctor of philosophy and psychology or the degree of doctor of science and psychology or the degree of doctor of education or doctor of philosophy and education.

MISCELLANEOUS.—A series of New York bills, all of which were killed,[354] proposed to prohibit the practice of roentgenology or radiology except by licensed physicians, osteopaths, dentists or chiropodists, subject, however, to the conditions and limitations of their respective licenses.

A bill was also killed in New York [355] which proposed to authorize the board of supervisors in any county to regulate the installation and operation of any machinery, equipment or apparatus to be used for the examination or demonstration of any person or thing by means of fluoroscopic exhibition or shadow imagery registered with photographic materials and the use of roentgen rays.

(To be continued)

352. Ill. S. 467.
353. Kan. H. 448.
354. N. Y. S. 1892, S. 969, A. 1064.
355. N. Y. S. 1893.

OFFICIAL NOTES

ANNUAL CONGRESS ON INDUSTRIAL HEALTH

Second Annual Meeting, held in Chicago, Jan. 15 and 16, 1940

DR. STANLEY J. SEEGER, Milwaukee, in the Chair

JANUARY 15—MORNING

Report of the Council on Industrial Health

DR. STANLEY J. SEEGER, Milwaukee: The first Congress on Industrial Health, held last year, revealed the complex nature of some of the problems in this field, as well as the vast extent of the field itself. The fact which emerged was one which had previously impressed industrial health workers, namely that conditions of work and their effect on health in relation to every kind of human activity would eventually come into the ambit of medical study and research. At a congress such as this, it is essential to limit our considerations to basic questions which are adaptable to specific application and to authentic reviews having a wide interest to the medical profession. The rapid advance of science has outstripped in many instances the advances of social and professional organization which would make possible the utilization of our knowledge. Controlled experiment is difficult to apply in industry because investigation involves the collection of numerous data on variables which are of value only when collected on a large scale and properly coordinated.

The desirability of a coordination of effort must be apparent even on casual study. While the wider scope of this work may be beyond the realm of medicine and lead into the field of the social sciences, the essential medical character of all industrial health problems and the necessity of medical guidance in their solution should be a focal point in our deliberations. It is necessary that we view in this light the impact of interests whose approach to these problems is from fields other than medicine.

Industrial health is part of the so-called human factor in which so much interest has been displayed in the past thirty years. Early reforms in this field were made on a purely humanitarian basis and not on the basis that industrial output would increase, and health and happiness also. The attitude of industry and industrial technics have changed. There have developed the speeding up process, the growth of repetitious work at the expense of heavier work, social changes, altered conditions of work and different types of workers. To date the medical and health functions of the United States have been divided among a multiplicity of departments, bureaus and federal agencies. Since 1875 the American Medical Association has urged the establishment of a single agency in the federal government under which all such functions could be correlated. Such a department would be an effective means of coordinating efforts to improve the health of the industrial worker.

The Council on Industrial Health has been assigned the task of developing an effective program to improve standards of industrial and compensation practice. It has expressed the belief that an important factor in the successful accomplishment of such a program is the development of cooperating agencies in the constituent associations and extension therefrom into the county medical societies. During the past year, committees on industrial health have been organized in most state associations and in several county societies. It is hoped through these agencies to acquaint the Council on Industrial Health with developments in the state and county associations with particular reference to problems of industrial health, and conversely to convey to the committees information about activities and policies of the Council. A means is thus provided also for the interchange of experiences between state committees. Through the agency of these committees, groups interested in industrial health may make a definite impact on the educational programs of their local associations. The excellent program which has been arranged under the auspices of the Chicago Medical Society is a splendid example of the type of educational effort which may be stimulated. Such committees should also define the problems which serve to obstruct the utilization of medical knowledge in the care of the industrial worker. These committees may well concern themselves with the application of the general principles governing the relationships between full-time industrial physicians and the general practitioner.

Vocational Rehabilitation in Relation to Medical Practice and Workmen's Compensation Procedure

MR. TERRY C. FOSTER, Washington, D. C.: Vocational rehabilitation means the rendering of a physically disabled person fit to engage in employment and his placement in employment. It had its origin in the realization on the part of workmen's compensation officials in several of the states that

the payment, to a worker disabled in industry, of compensation for his injury did not solve the problem of getting him back into employment and self support following recovery. By 1918 a number of the states had established vocational rehabilitation divisions as an arm of their workmen's compensation agencies, the purpose being to retain and thus return to employment in new jobs those who through industrial accidents had been deprived of their former jobs.

In 1920 the Congress established a national program to be carried on through the cooperation of the states. This national program is now functioning in forty-seven states, the District of Columbia and the territories of Hawaii and Puerto Rico. Each of these cooperating states and territories maintains a staff of from one to thirty rehabilitation workers whose job it is to find and return disabled persons to employment.

The service operates in about this fashion: When the name of the disabled person is reported or he himself applies to the state rehabilitation service, a case worker is assigned to assist him in working out his problem. The first step taken by the case worker is to secure a rather complete body of information concerning the disabled person and his situation as to (1) his physical condition, (2) his mentality and educational status, (3) his personality—i. e., his ability to get along with others, willingness to work, reliability, and so on, (4) his vocational experience and aptitudes and (5) his life situation—i. e., his family responsibilities, resources and the like. When this information has been collected it is analyzed and a rehabilitation diagnosis is arrived at, an employment objective is selected, and the ways and means of preparing him for and getting the disabled person into the employment selected are worked out with him.

In preparing him for employment, one or more of several services are provided for him, such as physical restoration, an artificial appliance and a special course of vocational training or, in some instances, finding a suitable job may be all that is necessary. But, whatever the services needed, I would emphasize that we stand by him until he is vocationally "well" again or demonstrates that he cannot be made vocationally "well." Naturally we get hold of many cases, just as do you, that cannot be rehabilitated even after our best efforts have been expended and, as do you, we make mistakes. Sometimes you get hold of some of our mistakes, sometimes we get hold of yours, and both of us get hold of the mistakes made by the workmen's compensation commissions.

It is my earnest hope that we can work out a plan by which vocational rehabilitation and workmen's compensation officials and the medical profession can work more closely together in dealing with disabled persons who stand in need of our respective services. Our common job in dealing with persons disabled in industry is to restore such persons to employability and employment. Under this concept it is the job of the medical profession (1) to restore these persons to their maximum physical efficiency, (2) to aid in maintaining their morale by advising them to apply for vocational rehabilitation if they are found to be vocationally handicapped (such advice should be given early in their treatment rather than at the end of it) and (3) to advise with the rehabilitation service and with the compensation officials on the medical aspects of restoring them to employment.

In dealing with certain types of disability, such as tuberculosis, vision, hearing, and cardiac disabilities, the vocational rehabilitation official relies almost entirely on the counsel and advice of the physician in determining the practicability of undertaking the rehabilitation of such cases and in determining the plan by which the individual is to be retained and placed. Likewise, workmen's compensation officials must depend largely on medical advice in the evaluation of the disability and hence the amount of compensation to be paid. I should like to assign to the medical profession a fourth job in dealing with the disabled: that of completing the job of establishing valid and reliable criteria for the evaluation of physical disability. Not only do rehabilitation and compensation officials need such criteria, the courts need it.

Unfortunately the job of the Workmen's Compensation Commission in dealing with persons disabled in industry is too often conceived to be only that of establishing the degree of disability and of paying out the benefits in accordance with the evaluation. Under the concept which I have stated, their job goes somewhat beyond the simple task of paying out benefits: 1. To see that the disabled person who needs it is given the opportunity of vocational rehabilitation. 2. Within the limits of their discretion, to see that the money paid to the disabled person shall be used as far as practicable in restoring him vocationally and hence to economic self support. In far too many instances, lump sum settlements and commutations are made without any apparent attempt to see that the money paid out will result in his economic reestablishment. 3. To seek, through amendment of those acts needing it, to remove the injustice caused by the so-called second injury clauses. The effect of these clauses in all but a small number of workmen's compensation acts is practically to make it impossible for a disabled person to secure employment in industry.

The job of the vocational rehabilitation service under our conception of joint responsibility for restoring the disabled to vocational competency is outlined as follows: 1. To organize and maintain working relations with them in such way that in every case the combined counsel of the doctor, and the compensation and rehabilitation officials will be brought to bear on the problem of reestablishing the disabled person vocationally, from diagnosis to rehabilitation. 2. To plan and carry out the rehabilitation of the individual on the basis of this combined counsel and understanding rather than on the basis of his own judgment independently arrived at, as is now the case in far too many instances. I have observed over this country thousands of instances in which rehabilitation workers have undertaken the rehabilitation of disabled persons without any attempt to secure medical advice or to utilize the assistance of the workmen's compensation office. Such practice in most instances is inexcusable and frequently results in the futile expenditure of money. 3. To operate the rehabilitation services in such a way that a fair proportion of the number of disabled persons served will be selected from those disabled in industry. The vocational rehabilitation act as originally conceived was intended to cover only those persons disabled in industry. As passed, however, it includes persons disabled from any cause. Unfortunately, in a large number of states, persons disabled in industry are not receiving the consideration contemplated by the sponsors of the legislation. It is high time for industrial surgeons and workmen's compensation officials in such instances to insist that the industrially disabled shall receive an equitable share of service. If our three groups can be brought together and given a common basis of understanding of what we are trying separately to do for the disabled, we should be in better position to coordinate our efforts and thus make fewer mistakes with those cases in which we are all concerned.

To effect this closer working together of the medical profession, workmen's compensation and rehabilitation officials would require joint action by the national organizations of the three groups. This action would probably take the form of the appointment of a representative from each of the three groups. The committee of three thus constituted would draw up a statement of the objectives and a proposed procedure. At the next meeting of each of the organizations the plan could be presented. If approved, the committee would be instructed to proceed to carry the plan into effect. The final form of action would probably be the publication of a joint brochure setting forth what the three groups stand for separately and jointly with regard to standards, procedures and practices in dealing with the disabled. If we believe that the three groups should work more closely together, let's say so and tell the members of our respective groups why and how it can be done. I should like for you to give consideration to my proposal. If you feel inclined to agree with me and wish to do something about it I would welcome the appointment of one of your members or officials to confer with representatives of rehabilitation and workmen's compensation.

DISCUSSION

DR. H. H. KESSLER, Newark, N. J.: The notion was long ago discarded that because a man is suffering from some specific physical defect he is necessarily disabled vocationally. The important thing is to minimize that defect by appropriate treatment. In that respect compensation laws are defective, in that the allowances for medical services are frequently limited so

that ample and adequate treatment is not permissible. In that respect, compensation laws should be adjusted to provide unlimited services, so that the ultimate rehabilitation of the individual is assured. So physical restoration is the fundamental purpose of this whole rehabilitation procedure.

I am sorry that Mr. Foster didn't describe the machinery of the relationship between the federal government organization and the various state agencies. The federal government assists these agencies by providing funds. Each state appropriates a certain amount of money, which is matched by the federal government, and the combined moneys are expended for this total program. There are few states, however, that practice a physical restoration program. New Jersey, fortunately, adopted this procedure from its very beginning and has continued to operate on the philosophy that the first and vital step is physical restoration, and to that end it has created and developed and operated five rehabilitation clinics. These clinics are associated and operated conjointly with the Workmen's Compensation Bureau, so that when individuals are examined for their compensation claims they are automatically referred to the rehabilitation clinic by the state physician who makes the compensation examination. In that way a close cooperation is set up immediately. The individual is referred to the director of the rehabilitation clinic, who makes an appraisal and also decision with respect to the necessity for further treatment, so that the individual gets the benefits of having the maximum amount of physical restoration achieved before any vocational training is instituted, and we find that from 75 to 80 per cent of the individuals who carry through that program require no vocational training. It is a very expensive and unique procedure to take an individual who is over 40 years of age and attempt to train him in a new occupation and change his habits. We have to be very careful in evaluating the mental and physical qualifications of these individuals. The federal government, in defining too rigidly the scope of procedure, also limits the possibilities of rehabilitation in the various state agencies. They could be very much more liberal in providing funds for the physical restoration or at least in matching funds that were provided by the state.

DR. A. S. LEVEN, Chicago: If all the agencies—the medical profession, the rehabilitation agencies, the compensation agencies—were united in doing all they possibly could do to rehabilitate a worker who is permanently disabled, there are still two factors that are a hindrance to this field, namely industry itself and insurance companies. We must educate industry and we must educate insurance companies to this major problem. Industry has not as yet recognized the obligation to the injured workman, and the workmen's compensation laws of the various states are still faulty. If we can combine with the agencies, as Mr. Foster brought out, those two who are mainly concerned from the monetary point of view, then we, as physicians, can go on record to help this cause along.

DR. EARL D. MCBRIDE, Oklahoma City: I think that Mr. Foster has hit a keynote. I would suggest, in order to carry it out efficiently, that the vocational and rehabilitation department in each state have authority to pass on the permanent disability cases in respect to vocation before the settlement is actually made. On account of the system we have, the present commissions are so busy taking care of the cases that come up for adjustment and award that the vocational part is often forgotten. Men may be paid off in lump sums and, as he has suggested, squander their money. The employer, represented in court oftentimes by the attorney of the insurance company, has his own interests to look after. The claimant, perhaps, is anxious to have the award made for his own benefit and thinks little of the future. If there were established in the vocational and rehabilitation department a medical authority who would impartially pass on the prospects of this man who is permanently disabled with regard to his future rehabilitation and employment, and this word could be passed to the bureau or to the commission of the industrial board, then it seems we would get somewhere with respect to the principles Mr. Foster has brought out.

MR. TERRY C. FOSTER, Washington, D. C.: Dr. McBride has hit what I think is the keynote in the whole thing, the bringing of the doctor into the evaluation of the whole program in which the individual is involved. I might say that we are only waiting for the medical profession to complete its job of setting up criteria for the functional evaluation of the disabled person after maximum correction has been made. I have already worked out with members of the medical profession a series of forms on which the doctor is to record his observations in the examination of disabled persons. As soon as the criteria for the evaluation of disability are completed, I think it won't be difficult to bring the two together, so that the doctor will have greater influence in the final disposition of the cases we serve.

A New Frontier in Medicine

DR. LYDIA G. GIBERSON, New York: Psychiatry, which once was merely custodial in its function, has passed through a difficult therapeutic stage and has reached the full stature of preventive medical technic ready for mass application. When the United States entered the World War, there was brought about the first application of mass psychiatry in world history. For the first time the scientific explorer could see the inception, the progress and the closing phases of a mental ailment, and for the first time he had the authority and the numerical scope with which to control his data and reach reasonably accurate conclusions. The moron and his incidence became nationally known. "Shell shock" and "rehabilitation" became understandable words in the vocabulary of every intelligent American. Many of the tabus surrounding the mentally unfit were shattered and, as a by-product of a social upheaval, psychiatry became therapeutic and not merely custodial.

In the postwar period, psychiatry became, by a series of literary accidents, a most unfortunately popular subject. Under the popular acceptance of Freud, Adler and Jung, mental ills became matters of common conversation. Psychiatry, in this middle period, came closer to being scuttled by popular enthusiasm than it ever had been in the earlier period by lack of opportunity to experiment. This earlier journalistic phase soon settled to the seriously restricted area of the psychiatrist's office. As early as 1916, psychiatrists became aware of the tremendous possibilities inherent in the masses of industrial workers. There was a field in which the conclusions one reached might be put to work to prevent sickness.

In 1917 and 1918 the late Dr. Elmer E. Southard interested the Engineering Foundation in the possibilities of a psychiatric approach to industrial personnel problems. In a survey in 1920 he found that 62 per cent of more than 4,000 cases observed reached the discharge status through traits of social incompetence rather than occupational incompetence. In 1922 the Metropolitan Life Insurance Company started a full psychiatric service for their employees, a service which continues to the present day. Later, in 1924, Macy's Department Store in New York, employing about 9,000 persons, began a psychiatric investigation which today serves as a research department.

The next major impetus came from industrial personnel groups in 1932 when they began to apply psychologic concepts to their perennial problems of labor turnover and labor placement. Safety workers and other industrial control groups have altered their procedures to allow for psychiatric technics. The progress from 1934 to 1940 has been a slow one of group education. Thus psychiatry has moved slowly away from the fashionable patient who alone could afford a two year treatment for real or fancied mental ailments. Slowly the mists created by novelty and jargon have lifted. The medical facts have emerged. Psychiatry can now open its new development in a great industrial laboratory where, by honestly sympathetic application of its principles, mental sickness may be not merely detected but prevented.

Workers are torn by two, often opposed, social systems; in his home and in his church he is a part of the century old compulsions which demand a unity of attitude if he is to attain happiness; in his factory he is in another world curiously inadequate and incomplete. Monotony produces the accident-prone and the maladjusted worker. Mental factors account for some 85 to 90 per cent of industrial accidents. Personnel workers have been investigating with the aid of psychiatrists the emotional causes of absenteeism and of friction among their employees. Industrial relations experts have been concerning themselves with the psychology of conflict in their attempts to get at the sources of trouble before it mushrooms into ugly proportions. Social workers have found that many of the complaints they hear are based on emotional rather than physical environments.

DISCUSSION

DR. CLARENCE D. SELBY, Detroit: Despite the fact that the industrial surgeon of thirty years ago has evolved into other specialties, such as industrial medicine, industrial hygiene and now preventive medicine, there is need for further evolution. The industrial physician today must become to some degree a psychologist, and you can readily understand why. Industrial physicians speak rather glibly of safe placement of employees or suitable placement in occupation and make a rather complete physical examination, but we do not examine the man himself. May we consider for the moment man as an automatic machine? But we, by the same token, completely ignore the mind of the man who is back of that machine. I recognize that the industrial physician has no responsibility toward the disordered mind unless that disorder results from occupation. The treatment of cases of that nature are the right and purpose and the obligation of the general practitioner. The physician in industry has no intention or right of depriving him of that privilege. Nevertheless there is a constant stream of employees flowing through the medical service, usually equivalent to the number of employees on the payroll each month, who have stories to tell to the physician. They may be expressions of a purely normal individual, or expressions of a disordered mind. So far as the physician in industry is concerned, it seems to me they are largely expressions of worry, and Dr. Giberson has brought that out in her paper. The men out in the plant just naturally gravitate into the medical office for the purpose of telling something which has no relationship to employment and is of a purely personal nature, but they must tell somebody and they look on the doctor as the one to whom they can tell that. If the medical profession can utilize that tendency of the worker to relieve these sources of worry by psychologic methods, if you please, the industrial physician will be in a vastly superior position with respect to his ability to serve the employee group. That might be classified as counsel or service. I am completely at a loss to know just how to evaluate these worries that come across the desk to me. I should like to have the psychologist put down a series of rules that would tell me how to proceed, something practical that will permit us to render the service that we wish to render but do not know how to do. There is another phase to psychology in industry that is very important but at the moment I believe beyond our ability even to comprehend, and that is what might be called man evaluation at the time of employment. We are able to examine the workman physically but we haven't the slightest conception of what we should do to find out what type of work the individuals are mentally fitted for. There are many examples. How the doctor can codify those and classify them, put them into categories so he can specify on the report which he sends to the employment department that this man is or is not mentally suited to this job is what we need of the psychiatrist.

DR. L. D. BRISTOL, New York: I should like to emphasize one phase of this subject in developing the discussion of Dr. Giberson's paper, and that is not only our responsibility as industrial physicians with reference to these problems as they pertain to the employer but our responsibility in educating management itself to the place of mental hygiene and the use of at least part time psychiatrists in the industrial health program. The average representative of management thinks in terms of custodial care and actual cases of mental disease, and that the psychiatrist is only interested in that aspect of the problem. He has shied away somewhat, as the executive, from this whole subject of mental health and the services of the psychiatrist. We must emphasize to management how the physician specializing in this field can be of assistance to him. I had the privilege of attending the Personnel Section of the American Management Association. What were they talking about? They were discussing What is the employee thinking about? What is he worrying about? What can we do to help him be satisfied with his job? We as industrial physicians should bring to the attention of the personnel director the fact that bad employee relations are very largely a matter of bad mental hygiene and that perhaps if he will avail himself of the services of not only his own physician in his organization but possibly the part time services of a psychiatrist he can do much to prevent these conditions he is talking so seriously about in his personnel meetings.

DR. LYDIA G. GIBERSON, New York: Dr. Selby has probably given you a much better psychiatric approach than any psychiatrist could, because he has been, for many years, practicing what I am trying to preach. I should like to tell Dr. Bristol, in all fairness to industry, that I believe management itself is headed for the doctors. Since 1938 I have had personally twenty inquiries from management groups to one from a medical group. I should like to mention the American Management Association. I think it was in 1926 that I was the guest speaker at the American Management luncheon, and for that one luncheon the personnel management group chose the subject of psychiatry. In Chicago on November 30 the Industrial Relations Association also had this subject featured. So I believe it is up to us as doctors to go out and do something about this. In closing, I would like to emphasize that before you can be a good psychiatrist you must first be a good doctor.

Adequate Nutrition for the Industrial Worker

LELA E. BOOHER, PH.D., Washington, D. C.: This paper was published in full in THE JOURNAL, February 17, page 548.

DISCUSSION

DR. MORRIS FISHBEIN, Chicago: I have been asked to discuss this paper probably because I am Chairman of the Council on Foods of the American Medical Association. The Council on Foods has been greatly concerned about practically every aspect of the subject as Dr. Booher presented it to you. I have recently reviewed a book published by the Department of Agriculture called "Food and Life." I suppose in that book we have more information about food and its distribution and the needs of humanity in the United States than is probably available anywhere else. The main problem, as I see it, in applying this material to the worker in industry is that workers in the United States are scattered through forty-eight different states and innumerable cities and villages and under all sorts of social and economic conditions. They are not easy to educate in the matter of food and not easy to educate with scientific material given away by the government and by educators. At the same time, commercial agencies of one type or another are endeavoring to educate them at considerable expense and have much more influence and much more experience in education than the scientists have generally. The material you hear over the radio as to what you can buy for a certain amount of money and what you ought to eat is what really educates the children of the United States and the workers regarding diet. In analyzing the statistics regarding the extra feedings of the worker in industry, I have always been concerned with the fact that the worker in industry has as many different considerations disturbing him as the person who is buying food for the home. Sometimes we forget that fifteen minute rest periods at two hour intervals will also enable him to turn out more work and probably better work than an extra glass of milk every two hours. Sometimes we forget that, if you give him a little more light to work with, and better light, he will suddenly start turning out more work. Sometimes changing the ventilation, the chair on which he sits, and all sorts of changes affect every one of these experiments. I suppose it is up to the industrial physician to work out a suitable program for testing the relationship of diet to the worker's output and to his general health. A single important observation of the type of that having to do with sodium chloride intake for the worker under conditions of excessive heat is worth any amount of effort that the industrial physician or any one else may care to put on an experiment of that sort. Dr. Booher has given a fine statement of standards and of the present status of knowledge on the relationship of nutrition to industry. It might be well if the Council on Industrial Health could take up the question of how to get management and the workers themselves to pay more attention to the knowledge we now have. It is primarily an economic problem for workers in the low income levels. For workers in the higher income levels it is a problem of education. American workers spend for themselves and their families about 30 per cent of their income on food. With 30 per cent of their income they ought to be able to get a fairly good standard of nutrition. The translation of what we know, for the worker, into a language he can understand is also exceedingly important. All together, we have a great problem in how

to control advertising of food products, which the Council on Foods is endeavoring to do and, second, to get knowledge over to the worker in a language he can understand.

DR. L. D. BRISTOL, New York: I should like to indicate something with reference to the practical application of a nutrition program in industry. First of all, it should be the function of the industrial physician to keep these facts of malnutrition and adequate nutrition in mind in dealing with the individual employees. Some companies see fit to go into the question of extra feedings. Other companies have preferred to emphasize the educational aspects of this whole problem. During the last ten years, as a follow-up to our regular health course, for women particularly, we have been carrying on a so-called nutrition course under the guidance of a trained nutritionist. We have already had something like 10,000 women employees who have been graduated from a ten lesson nutrition course, a purely voluntary course given on the employees' own time, with trained instructors and the necessary textbooks. While as yet we haven't been able to measure results from the standpoint of efficiency or decreased amount of sickness or improved positive health, we have definitely been able to measure the improvement in the choice and selection on the part of employees when it comes to their food, particularly in our cafeteria. In all of our companies, all of our offices have a lunchroom or cafeteria, and it is possible for us to judge the demand on the part of employees for certain articles of food. Previous to this health course we know that, particularly during rest periods, the employee would go to a counter and get some chocolate candy and a soft drink. We have been able to determine that as a result of this nutrition course for employees a great increase has taken place in the demand for milk and green, leafy vegetables. That is one way of measuring nutrition education. The very fact that they are selecting a better type of food is a positive way of getting at this subject. I am not so much in favor of management trying to add extra feedings. I think that, if anything, we should educate the employees to do this thing from their own standpoint and see that they get three better meals a day. We found that among our employees breakfast is nothing but a sip and run meal, if you will, a hurried cup of coffee grabbed on the way to the office. We know that lunch is frequently nothing but a very poor sandwich and a cup of tea. So much of our educational work for employees involves three satisfactory meals a day, with the hope that the employee will take these things to heart and that, in the long run, it must improve his health.

DR. LELA E. BOOHER, Washington, D. C.: Something Dr. Fishbein mentioned makes me a little worried about those tables I gave you. I hope you are going to keep those in your office and use them as your source of knowledge, to communicate and translate to the worker. It makes a chill run down my spine when I think it might be handed to industrial workers who would be confused about it all. Certainly, teaspoons and bottles of things are what the average person thinks about when he thinks of quantities. We answer about fifty letters on foods and nutrition a day, and the questions are amazing. They want the government to cure every disease they can possibly think of. Diets for different diseases are thrown in at us, until we have worked out a form letter in which we just change the name of the disease they have asked about and refer them to their physician. It isn't possible to give help *en masse*. That individual problem is there in nutrition, as it still is in medicine.

JANUARY 15—AFTERNOON

DR. WARREN E. DRAPER, Washington, D. C., in the Chair

SYPHILIS IN INDUSTRY

Syphilis in Industry, with Special Reference to Its Incidence and Relation to Trauma

DRS. EARL D. OSBORNE, HERBERT L. TRAENKLE and FRANK A. DOLCE, Buffalo: The importance of syphilis in industry was recognized long before there was any thought of the present campaign against syphilis. Studies on isolated industries, such as Stokes and Brehmer's on railroad workers in 1920, had awakened the realization in the minds of executives of some corporations to the responsibilities of management in the control of syphilis. It was only natural, therefore, that in the public health campaign against syphilis, begun in 1935, organized industry should present a fertile field for an intelligent attack.

Stokes, Beerman and Ingraham have recently summarized the various studies on the incidence of syphilis in industry from 1920 to date. When the campaign against syphilis was instituted in Buffalo, in August 1935, it was apparent that in any approach to the problem of syphilis in industry in a large industrial city, a determination of the incidence of the disease in industry generally was absolutely essential. With this in mind, the director of syphilis control of Buffalo began a survey of all blood serologic tests performed in the laboratory of the department of health of Buffalo from the industrial concerns throughout the city.

During the first two and one half years of the survey, Jan. 1, 1935, to July 1, 1937, males in general industry showed 6.7 per cent positive tests and females 5.9 per cent, or a combined percentage of 6.6. During this same period there were 6.1 per cent positive tests in food handlers and 4.6 per cent positive tests among patients seen by private physicians. During the last six months of 1937 and the entire year of 1938, 2,500 additional routine serologic tests were performed on the bloods of industrial employees. Probably as a result of the intensive campaign against syphilis, the percentage of positive tests dropped to an even 5. If from these figures the tests performed on Negroes are subtracted, the final result is approximately 5 per cent positive during the initial period of 1935 and 1936 and the first half of 1937, and 4 per cent during the second period. In 1938 the number of early or new cases of syphilis in the entire city dropped to approximately one third the number reported in 1935.

An industry that employs a large percentage of individuals in the age group from 18 to 30 may expect a relatively high incidence of early syphilis. An organization that employs a large percentage of individuals in the age group from 30 to 40 may expect relatively few cases of early syphilis and a high preponderance of latent syphilis and early cardiovascular and neurosyphilis. An industry with many employees of long duration in the age group over 40 may expect a high incidence of late cardiovascular and neurosyphilis. It is important for industrial physicians to know and appreciate which type of late syphilis may be expected to affect operating efficiency and to present the greatest hazard from the standpoint of injury to the employee and the public.

With these points in mind, it was advantageous to survey a large group of industrial workers examined at the Edward J. Meyer Memorial Hospital. Four thousand and six individuals were examined. As the patients of this hospital are mostly unemployed or in the lowest income group, it was desirable to survey a similar group of industrial workers seen in private practice who also had syphilis and had received a thorough physical and serologic study. Of 399 workers in the "heavy" industries, with syphilis, less than 7 per cent presented early syphilis. Among the workers in the "light" industry group, the percentage of early syphilis was 23.8. The discrepancy emphasizes the necessity for periodic examinations and serologic tests on the workers in the so-called light industries. In the heavy industry group 18.5 per cent showed evidences of neurosyphilis and 29.9 per cent of the workers in the light industry group were found to have neurosyphilis. Clerks, skilled workers and railroad employees with asymptomatic and late neurosyphilis can account for a large amount of lowered operating efficiency, direct monetary losses and accidents involving the public, the fellow workers and themselves. In the heavy industry group 13.5 per cent showed evidences of cardiovascular syphilis, whereas in the light industry group, in which physical stress is reduced to a minimum, only 5 per cent showed evidences of cardiovascular syphilis. Our observations on patients developing aneurysms and aortic regurgitation as a result of trauma or severe exertion while employed in heavy industries indicate that each case costs the industry some five to ten thousand dollars. The detection of syphilis in heavy industries, where it is largely neglected, is therefore of definite practical economic value to the industry itself as well as to the employee. In the combined groups of the food handlers, seventy-seven had syphilis and thirteen had manifestations of early or infectious syphilis. If it is desirable to detect early infectious cases among food handlers more than it is among other groups, and we doubt that it is, a routine serologic test, performed every three to six months, cannot be expected to pick up more than 25 to 50 per cent of the infectious cases during the first week

of their existence. If compulsory serologic tests are performed on food handlers with the idea of protecting the public from infection, we believe that the entire plan is wasted effort. We have never seen a case of syphilis transmitted by food handlers or, for that matter, by clerks or barbers meeting the public, through intermediate contact with plates, glasses, cups, vegetables or fruits. The greatest danger from these individuals is the transference of the disease to other employees and to patrons of the establishment through the usual method of sexual intercourse. It would be more to the public's benefit to have laws requiring the compulsory physical and serologic examination of employees of all public transportation companies.

We have reviewed our cases of syphilis complicating trauma. These cases are listed under the following diagnoses: (1) surgical incision in preexisting periosteal gumma; (2) nodulo-ulcerative tertiary syphilis occurring at site of recent injury; (3) fracture at site of preexisting osseous gummas; (4) periosteal gumma following a blow on the tibia; (5) osseous gummas of the skull following a blow on the top of the head from a timber; (6) interstitial keratitis following an injury to the cornea from a foreign body in congenital syphilis; (7) interstitial keratitis after a burn of the cornea from hot solder in acquired syphilis; (8) dementia paralytica following a severe head injury; (9) dementia paralytica following prolonged surgical anesthesia; (10) dementia paralytica following high temperature from streptococcic infection; (11) aortic aneurysm following heavy physical exertion.

In analyzing these cases, the following conclusions were apparent. 1. The average cost of each case to the industry was exceedingly high. 2. The proper syphilis program in each industry involved would have prevented syphilis from being a factor in any case. 3. No cases of syphilis complicating trauma have been seen by us in plants having an adequate syphilis program.

We submit the following suggestions regarding a syphilis program in industry:

1. Establish routine preemployment physical and serologic examinations and periodic reexaminations of all employees. This should include executives, clerks and skilled workers as well as the purely physical workers.

2. Sponsor refresher or postgraduate courses in syphilology for members of the medical staff and make adequate consultation and supervisory services available.

3. Become acquainted with the following scientific facts: (*a*) the danger of transmitting syphilis in industry from direct or indirect contact (tools, drinking cups, door knobs, toilet seats) is absolutely minimal and the factor of least importance in the control of syphilis in industry. (*b*) The positive serologic test is no criterion of infectiousness and should be interpreted only by a physician on the basis of a complete physical examination and determination of type or kind of syphilis present. (*c*) The positive serologic test or its degree of positiveness is no measurement of the stage or seriousness of the disease or effectiveness of treatment. (*d*) The negative serologic test without physical examination is open to the same criticism as is the positive test. The highly infectious primary lesion is not accompanied by a positive blood test during the first four to ten days of its existence and an appreciable percentage of individuals (5 to 10, depending on the laboratory technic) with late syphilis have negative blood tests. This fact together with the necessity for discovering newly acquired infections among old employees is the reason for periodic reexaminations.

4. Based on a knowledge of the foregoing facts, an enlightened policy toward prospective and old employees should include: (*a*) Rejection only of those syphilitic employees who show evidences of damaging late syphilis or early infectious syphilis. (*b*) Insistence on complete physical examination, including spinal fluid examination for all employees found to have syphilis. (*c*) Insistence on adequate modern treatment with supervision by a syphilologist if indicated in special cases. (*d*) Transfer of employees with cardiovascular and neurosyphilis to positions entailing no hazards for themselves, their co-workers or the public. (*e*) Dismissal only of those syphilitic employees who refuse to cooperate. There is nothing more unjust than the blind dismissal of an employee because of a positive Wassermann reaction. With cooperation and proper treatment, the industry will gain a loyal employee and take on no increased hazard. (*f*) Maintenance of strict confidential relationship between employee and company physician. (*g*) Cooperation with local health authorities in reporting and tracing the shifting or migrating worker with syphilis.

For industrial physicians and surgeons:

1. Become conversant with published data regarding the direct and indirect cost of syphilis to industry in general and your own plant in particular. Use this knowledge in "selling" your company executives on a proper modern syphilis program.

2. Improve your own knowledge about syphilis with postgraduate courses and secure adequate expert advice and guidance from a qualified syphilologist.

3. Cooperate with the local public health authorities in tracing "contacts" and itinerant workers with syphilis, and also in the elimination of houses of prostitution from the neighborhood of the plant.

4. Keep a complete record of the physical examination and treatment of every syphilitic employee. Check his treatment with the recognized published systems of treatment indicated in his case (early, latent, liver, cardiovascular, skin, bone, special sense organ and neurosyphilis). Insist on consultation with specialist where indicated so as to check up on the adequacy of treatment.

5. Don't be satisfied with a diagnosis of syphilis. Insist on knowing the kind or type of syphilis and the degree of damage, if possible, in the principal organs involved.

6. Remember that late cardiovascular syphilis is from two to three times as common in workers doing heavy physical labor as in those performing jobs requiring little or no physical strain. Remember also that neurosyphilis is almost twice as common in executives, clerks and skilled workers as in "heavy" laborers.

7. Remember that all persons with syphilis, unless it is contraindicated by old age or general debility, should have a spinal fluid examination. Approximately 15 per cent of the workers with "latent" syphilis will be found to have a positive spinal fluid.

8. Remember that persons with cardiovascular and neurosyphilis require specialized treatment from the beginning.

Syphilis Case Finding in Industry

DR. ALBERT E. RUSSELL, Chicago: This article will be published in full in THE JOURNAL.

Integrating Syphilis Control Between the Industrial and the Private Practitioner

DR. HAROLD A. VONACHEN, Peoria, Ill.: With the acceptance of a syphilis control program by industrial organizations, the medical divisions assume responsibilities which require conscientious administration of a very definite routine. The various plans of syphilis control programs differ little in the main, with slight variant in detail. The most perplexing problem seems to be the method of approach to the family physician. The relationship between the family physician and the industrial physician must be based on honesty of purpose always in the light of past experiences. The industrial physician needs the aid of the family physician in his care of compensation cases, while the family physician requires the good will of the industries medical division in the reference of nonoccupational cases. The family physician must be convinced that never will the medical division of industry render treatment in cases of syphilis. When a worker is informed of his syphilitic condition, he is in need of a friend to give him advice and guidance. If the procedure is attempted by the private physician alone, the employee is likely to think that, because the treatment is long and expensive, he is being overtreated. The plant physician can and does advise the employee that the treatment of syphilis requires time and money and that the family physician must follow the long continuous course of treatment.

In our present plan of syphilis control, the individual, following an interview with the personnel and employment departments, goes to the medical department for physical examination. If the Kahn test is found positive, the employee is given a personal interview with either the medical director or the plant physician and is informed that the blood test reveals evidence of syphilis and that he must present himself to his family physician for a check of his Kahn test. The employee is given ten days to return and, if the results of the blood test taken by

the family physician fail to agree with the primary test, a specimen is sent to a third and a fourth laboratory. If the blood tests check, the employee is told that the information is absolutely confidential between himself, the industrial physician and the family physician and that absolutely no information has been given to the employment or personnel departments. This is essential, as on it depends the success or failure of the plan.

The employee is then told that he must present himself to his family physician for treatment and that he will be given employment as long as he continues to cooperate. Each month thereafter the employee must present to the medical division a slip signed by the family physician that treatment has been received. A careful check and file is kept so that automatically the medical division knows each person that is expected on the given date to present his slip. If reports from the family practitioner are favorable, the employee continues employment. If not, he is called to the medical division to ascertain the reasons for his neglect and further advice is given and warning as to the necessity of treatment. Continuous neglect calls for dismissal of the employee.

After seventy weeks the family physician is consulted as to the amount of treatment received by the patient. If it is considered adequate he is requested to return every six months for reexamination.

The operation of this plan depends on the type of syphilis that presents itself in the individual. Employees in the primary or secondary stages, of course, are rejected, and also those who have definite evidence of neurosyphilis. There can be no objection to this plan by the family physician, as the cases are referred directly to him for treatment and the only requisite is cooperation in maintaining the treatment for the proper period of time, and he receives only those who are capable of paying, as the others are referred to the state clinics, who are asked to follow the same procedure.

I believe that the industrial practitioner might and should inform the employee of the need of protection and investigation of his family, but certainly the duty of reporting to the state, and the family diagnosis, belong strictly to the family physician.

In my opinion there should be greater unity in fees and a budgeting of the individual's earnings to cover adequately the payments of his treatment. The fact that an individual is given employment with the understanding that treatment is necessary should guarantee the treating physician his fees. The details of a syphilis control program are unimportant if it provides adequate treatment and allows the employee to continue his God-given right to earn a living for himself and his dependents.

Syphilis and Employment

DR. HARVEY BARTLE, Philadelphia: Our sympathy is aroused for afflicted persons and it becomes the primary motivating factor in rendering all possible assistance to restore health to these unfortunates. The humane reaction is the dominant factor in the restoration of optimism, health and happiness to these persons. In major industries there is a familial relationship between employer and employee; consequently industry becomes morally obligated if not otherwise to the workers. It is not simply a moral right to relegate to the state as a charge or beneficiary known infected persons. There are other avenues open for successful rehabilitation, preferably accomplished through the maintenance of earning power. To do otherwise would in many instances produce a disgruntled citizen.

Social and economic factors of employment lead to the impression that industry has an obligation to society in not refusing employment to any one without good and sufficient reasons, thus creating unwarrantedly a group of unemployed and unemployable persons. The present day emphasis on social security in its blanket approach surely will not condone the exclusion of any group indiscriminately when there is a way out, reasonable and fair, and with a minimum of industrial risk if properly supervised. This responsibility is difficult to evaluate in the case of the syphilitic because of the varying physical and mental impedimenta. Every trained artisan is a capital investment and any personal handicap is disturbing for many reasons.

What advice is it possible to give to industrial management about the advisability of arbitrarily refusing employment to all known syphilitic applicants? The well informed physician in industry can allay any perturbation about the transmissibility of the disease in the industrial environment. He cannot be quite so reassuring about the purely economic considerations which have to do with slowing up production, absenteeism, proneness to accident, and neurologic and mental changes with their consequences. Industry has little evidence on which to base a policy of discrimination against applicants who are known to have syphilis or the dismissal from service of persons who acquire syphilis after employment. Do not misunderstand this pronouncement. There must be some protection to the employer as well as to the employee. The modifying factor is the status of the disease.

Syphilis of the central nervous system is a real industrial medical problem. Persons in this category who sustain slight trauma may have more serious aspects of the disease precipitated. From the neurologic angle are frequently seen tremors, changes in sensation, disturbance of locomotion and incoordination, which are obviously handicaps of varying degree. If persons with these manifestations are retained in the service, special placement and supervision are certainly needed to protect the individual and as a general safety measure. Pathologic structural changes in heart and blood vessels are susceptible of various interpretation. They are admittedly fraught with potential danger from the standpoint of sudden incapacity. The manifestations of the disease are the criteria on which the disposition of the afflicted persons on an employment status must be predicated.

What then is the advisable thing to do from a medical point of view? The following postulates may appropriately express the present generally accepted opinions operative as a guide in personnel planning by industry:

1. A person having had an initial lesion or congenital syphilis, with or without a positive blood Wassermann reaction, may be accepted as a new employee.

2. A person with an open lesion should not be accepted.

3. A person with a positive blood Wassermann reaction and not under proper, safe and adequate treatment should not be accepted unless it has been definitely established that the individual is Wassermann fast.

4. Those having pathologic changes of the heart and vascular system of a precarious nature should not be accepted or permitted to work, even if the person should be under medical supervision.

5. Persons with advanced pathologic changes in the bony structures are a menace in any work and should be guardedly employed.

6. Those having pathologic changes in the brain and spinal cord should not be accepted and those in active service should be relegated to placements of safety with periodic examinations.

DISCUSSION ON SYPHILIS IN INDUSTRY

DR. HUNTINGTON WILLIAMS, Baltimore: There will be little disagreement with Dr. Osborne and his co-workers on the matter of the lack of necessity for syphilis tests for milk and food handlers and other special groups. It is often the duty of the medical director in industry to try to persuade the head of the industry that that is so. Drs. Osborne, Traenkle and Dolce hit a keynote in the emphasis we must all put on the terrific cost of syphilis in and out of industry. The geographic location in the country has a big effect on the amount of syphilis present in the community. Dr. Russell gave us some statistics. Magnificent work has been done in Scandinavia, but I am a little leery of statistics. Sir Arthur Newsome told us that when dealing with statistics you should treat them like sausages: who made them, out of what they were made, and for what purposes they were made. When I prepared the first paper I ever gave on a health topic I went to the director of statistics in the state health department in Albany and asked him for some figures on tuberculosis. He said "Doctor, what side of the argument are you on? If you are against it, I will take it out of this pigeonhole, but if you are for it I will take it out of this pigeonhole." Dr. Vonachen and I agree that syphilis records ought to be confidential. What is confidential? It is confidential between three or four people. Why not add a fifth? I would, as a health officer, disagree with him when he says that the industrial director should not report to the health department. In most states

that would be illegal. I agree with practically everything Dr. Bartle said. Dr. Osborne and his co-authors apparently wrote their paper in part around the same editorial by Moore, which is the basis of the plan which we have put to work on syphilis control in Baltimore. I am sure that Dr. Vonachen visualized both the industrial and the private practitioner as part of a larger medical team which includes every physician within a community under a civic and perhaps even a health department banner; a team whose goal is the control of syphilis through a more effective and community-wide application of diagnosis, therapeutics and epidemiology. I believe that case finding in syphilis requires a different technic from that used for most other communicable diseases, and particularly tuberculosis. The epidemiologist in syphilis must work hand in hand with carefully trained social workers in the clinics, and many industrial and family physicians must broaden their vision of community responsibility if syphilis is going to be fought down. Reliable figures on the prevalence of syphilis are difficult to get. Month after month statistics pile up in health departments on reported cases of syphilis, but many of the reports represent old cases that may have been reported at some other time, under some other name or in some other health jurisdiction. There are many duplicates in the reports that go to make 760 times as much syphilis in America as in Sweden. A plan which, during the past three years, has been developed in our city for syphilis control in industry was described in the July 1938 issue of *Baltimore Health News*. It is based primarily on a very striking editorial in the May 1937 issue of the *American Journal of Syphilis, Gonorrhea and Venereal Diseases* and simultaneously in the *Journal of Industrial Hygiene and Toxicology*. The plan emphasizes the truth that the public often seems loath to accept the fact that syphilis spreads relatively rarely except by the sexual route. It also stresses the fact that a positive blood test does not always mean communicable syphilis. The heart of the Baltimore Plan is a written agreement entered into voluntarily by the medical director representing any industrial organization in which application is made for the health department laboratory blood testing of employees and which provides for the reporting and follow-up of positive cases but which includes the very special stipulation that "No discrimination is to be practiced on employees or prospective employees because they show evidence of venereal disease on laboratory tests but are otherwise physically fit for the employment which they have or seek." That is the kernel of the whole plan. It is taken right out of Dr. Moore's editorial. From February 1938 to date, eight industrial organizations in Baltimore employing, roughly, 8,490 workers, through their medical directors, have entered into what I consider may prove to be a most satisfactory community approach to the control of syphilis in industry. In Baltimore we use the serodiagnostic test. We have thrown the word "Wassermann" overboard because we don't use the test any more. If we can get the public to throw the term "Wassermann" overboard I think we would be better off, because usually they misspell it anyway. The Baltimore City Health Department has cooperated with various industrial organizations in our city along educational lines by providing moving pictures, speakers, exhibits and press and radio material on syphilis control in industry. Our particular plan may offer a reasonable and carefully guarded approach to the big problem ahead. It may need modification in some community other than ours. We have found ourselves blocked in a large intercity industry because the city health department in their home office city makes a practice of taking the blood samples of the industrial employees without cost to the industry. We can't afford to do that. The home office of this industry issued orders that their medical director in Baltimore might not cooperate with our plan, which requires the industrial physician to take his own blood specimens and submit them to our health department laboratory. We shall find an answer on that. Occasionally we find that large interstate industrial units are hard to budge when, on the advice of their medical directors, they positively insist on a policy of discharging employees in certain categories merely on the basis of a positive blood test when the employee is known to be otherwise physically fit for his job. Careless or unthinking members of the medical profession may also disrupt a smooth working syphilis control program and the equanimity of the occasional medical director in industry. I have a few copies of the written outline of the plan available for you, if you should like to take them with you.

Dr. Christopher Legge, Crockett, Calif.: I speak as a plant physician with regard to adequate propaganda, which adequate propaganda means not too much and not too little. Where a program is in force, where the syphilitic are all known and are handled personally, I feel that the less propaganda, the fewer posters, the less that is brought in, the better. If in a situation such as the fourth speaker describes where Wassermann tests are not routine, I think propaganda might be in order to encourage people to come for investigation. Syphilis can be cured. Syphilophobia can't be cured, and those people suffer more and are more inadequate than the actually diseased persons. The propaganda, if it is directed by a conservative plant physician in whom the person has confidence and is put out by him personally, will attract the attention of the introspective introvert, but the extrovert whom you want to change throws it away and pays no attention.

Dr. Beverly L. Vosburgh, Schenectady, N. Y.: In 1932 we started a program of routine Wassermann tests and found at that time about 4.4 per cent incidence. That incidence has gradually decreased until in 1939 it was 1.8 per cent. We pay the local laboratory $1,000 a year for doing our Wassermann tests. We have to convince the management occasionally that that $1,000 is a worthwhile investment. We find not infrequently that patients who have repeated positive Wassermann reactions have no knowledge of syphilis whatever. They haven't the slightest idea how they contracted it. It is hard to convince those people that the presence of repeated positive Wassermann reactions is adequate excuse for two years of uninterrupted treatment. The cost of treatment for the patient in our community is about $5 per treatment a week. Over a period of two years that means roughly $500, which is quite an item to a man who makes perhaps $20 to $25 a week. Some of those people migrate to clinics where they have a pay scale commensurate with their incomes. There are many people in industry who say they do not have a family physician. They don't want to go to clinics, and it is a bit difficult to pick out a physician for treatment. It took us a long time to formulate a policy in respect to syphilis. At first, in 1932, practically all of the people we were examining or reexamining were old timers. We had no difficulty in placing them at work. Even the neurosyphilitic and those affected with cardiovascular lesions were usually safely placed. When it comes to the present time, many of the people we find with syphilis are new employees who have no service. When it comes to the policy in regard to new employees, it is a little different.

Mr. Verne A. Zimmer, Washington, D. C.: I do not represent labor but in my official capacity I have talked to many labor leaders about this program. I find them sympathetic with this movement to check syphilis but distinctly unsympathetic toward the idea of picking the industrial worker, out of all the groups, as the guinea pig. In a conversation one of the labor leaders of fairly broad national reputation in Washington said "Labor would feel better about this move to examine for syphilis all workers in industry if some other groups would step forward first as an example. Why pick on the worker more than the medical profession? Why pick on the worker more than the chamber of commerce? Why not pick out the church congregations? They are accessible as groups." Labor doesn't believe you can put up a program in industry for preemployment physical examinations for syphilis that doesn't involve general conditions as well. In the main, labor doesn't like the preemployment physical examinations, because it has had bad experience with it. I was interested to hear Dr. Russell mention that point. He said that unfortunately there are employers who immediately discharge or who refuse to hire the man with a plus Wassermann reaction. I have been interested in one item this afternoon, and that is the debunking of the idea that these spirochetes are hopping around and you can get them anywhere, even in the dining room. Labor will be pleased to know that, while it is theoretically possible, it doesn't really happen. Labor would have been interested to hear these com-

ments on cost today. There are several million workers in the United States not averaging $1,000 a year. How is one of these going to take even $100 and divert it from his family for treatment for himself? If you are going to emphasize this program with respect to the lower wage groups, there must be more monetary aid from the national, state or local governments. I am secretary of the International Association of Accident Boards and Commissions. In the years in which I was engaged in the actual administration of workmen's compensation, this subject was an old one. I have listened to one speaker after another this afternoon point out that in this program the employers can save lots of money, heavy losses, by watching for syphilis and perhaps eliminating the syphilitic. I probably have seen many reports on injured workers. In the aggregate I have seen quite a large number of cases in which underlying syphilis contributed tremendously to the cost, but out of an average of 100,000 cases a year in my jurisdiction a very small percentage of the total were in any way influenced by the syphilitic condition. It should be remembered that, under the principles of workmen's compensation, no employer, unless he is self insured, bears directly the cost of one injury. It is spread over industry in general. He pays in proportion to the experience in his particular group. That is the proper principle. Otherwise there would be even more restrictive physical examinations than exist today.

DR. A. S. LEVEN, Chicago: The reason I pop up at these meetings is that I feel the rank and file doctor ought to get up and say something. To leave everything to the authors of papers is all right—we can read it in our journals; but I think if popular discussion arises on the floor, then we really get an expression of opinion. I should like to suggest that more get up to speak if time permits. Every author has told us definitely the etiology, the symptomatology and the treatment for syphilis, both in industry and out of industry. Yet with all this information there are still the problems of syphilis. The reason is that the real etiologic factor, which was pointed out by the last discusser, is the socio-economic factor. We talk about that point but we ought to reemphasize it time and time again. In the problems of social diseases, tuberculosis and syphilis, when our society learns to cure our social and our economic ills we shall cure syphilis and tuberculosis.

DR. NORBERT ENZER, Milwaukee: In 1927 a routine Wassermann test was instituted for all patients admitted to our hospital and later this was amplified by other serologic tests on syphilis. I am unalterably opposed to dependence on clinical methods for the diagnosis of syphilis. What does the detection of syphilis mean to the individual? First, it must mean that the attending physician is provoked into a type of examination of that individual which he does not, under any other ordinary circumstances, employ. I would not expect that in any routine preemployment or periodic physical examination the early signs of neurosyphilis would be detected unless that physician has been stimulated by the knowledge of positive serologic observations. One thing labor and the public should recognize is that, in the last analysis, this program for the prevention and cure of public health syphilis is for the benefit of the syphilitic. Whether or not there is any justification for not employing a syphilitic person will depend, I think, on the knowledge and the application of that knowledge by conscientious physicians and not on any other reasons. I think an important point for physicians in the handling of syphilis is thorough understanding of the mechanism by which syphilis impairs and interferes with healing, such as in fractures, wounds and so on. I don't believe there is any proof that syphilitic involvement locally, at the site of the injury, is of major importance; rather, we are dealing with an individual who has a constitutional defect, generally deep seated in his nervous system and sometimes in his vascular system.

DR. S. S. KETY, Picayune, Miss.: I have waited for some one to say something about syphilis in the South. I come from a small town, with small industries, but where syphilis has become a major problem, because of the lack of treatment and because of lack of education of the people. In the community from which I come the industrial physician is the family physician. He works closely with the board of health; he also runs the syphilis clinic. So there is no such thing as a patient not being able to get treatment, if he will have it. The thing that has been left out of the Southern policy is forcing treatment. We offer treatment for 10 cents a week. We get patients to come for ten or twenty weeks and then they stop. We go out to see them ourselves and they say they have had enough. It is only recently that I have been able to get employers to listen to forced treatment, and they have consented to discuss that with me on my return from this congress. But the industrial worker can get treatment at a price comparable to his level of earning, whether it is in the North or in the South. But we must not talk only of industrial workers. There is his family. As a family physician I say Why stress the industrial worker when he has a wife and children? I went to the homes of women who were pregnant—this was before the government gave us our medicine—and offered to give them treatment for 25 cents, if they would just come and take the treatment. We got, on the average, one out of every ten cases. So the problem does not present itself of forcing treatment on the industrial worker but on an industrial worker's family.

DR. EARL D. OSBORNE, Buffalo: I rise to take exception strenuously to one or two remarks Mr. Zimmer made. I was stimulated by some of the things he said, and I am quite in agreement with some of them; in fact, with most of them. The benefit of a syphilis program to the employee was stressed repeatedly in the paper of myself and my co-workers, and in the other papers also. He is the man that is being benefited. Also the employer is being benefited, as is the public. It was with some reluctance that a plant owner, who employs some 1,200 workers, most of them in the age group from 20 to 35, put in a syphilis program. We found fifty-seven workers in his plant with syphilis, which was a percentage of a little less than 5. Those patients were carefully examined. And yet that isn't to the benefit of the employees! Whom is it benefiting? What would have happened to those individuals if their syphilis hadn't been found? Wouldn't the employees have gone on and developed late cardiovascular aneurysms and died a cardiovascular death? Many of them would have developed dementia paralytica and insanity. To whose benefit was it, but to theirs, to have a syphilis program? As to the cost, I am absolutely convinced that no one with syphilis need go without adequate treatment, and I don't believe 90 per cent of the individuals who come back and say they can't get treatment because they can't afford it. I know from personal experience that adequately trained individuals are willing to treat a patient for syphilis under one facility or another, whether in private practice, a semiprivate clinic or a free clinic, for whatever the patient can afford. I know it is generally the rule today, even among the most highly skilled syphilologists, that they will treat an individual with syphilis down to $3 or even $2 a week, provided he takes strenuous treatment and keeps at it.

DR. ALBERT E. RUSSELL, Chicago: I tried to stress in my paper the importance of routine blood testing. One of the big hospitals in this country reports that over 60 per cent of the patients who come there who have cardiovascular syphilis absolutely had no knowledge that they ever had syphilis. For that reason, and for many others, I believe that routine blood testing is important, no matter how good a diagnostician one might be. I should like to add a word about the cooperation I have had from labor groups. It is my particular duty and assignment to promote syphilis programs in industry. We sell the idea. We usually don't have to sell the plant physician, but we help him to sell the management in many places. Then we take the work into consideration. By approaching the heads of the unions or the leaders of their groups, we explain to them what it is about. We have had a most interesting and most happy result. In some instances the union has insisted that the management assure them they will carry out the program as recommended by the Surgeon General of the Public Health Service, and in so doing we have had nothing but amicable relations. In one of our programs the plant physician and even the personnel man said to us that they felt it brought the employer and the employee closer together, because the physician carried out his program in confidence between him and the worker. The management didn't know which were the positive cases. We have prepared articles for labor magazines, trade journals and plant papers and, even though we have started programs in plants where

there has been recent labor trouble, this syphilis program seems to be one that is going along nicely for the employee and the employer. We have not singled out the industrial worker alone to promote this syphilis program. Of the blood tests taken in Chicago last year, I believe 66,000 of them were listed as industrial workers. The industrial program is only a small part of the big syphilis program.

DR. HAROLD A. VONACHEN, Peoria, Ill.: I, like Dr. Osborne, was going to say nothing until Mr. Zimmer took the platform. The only difference between Dr. Osborne and myself is that he agrees with most of the things and I disagree with most of the things. What does industry gain by a syphilis program in comparison to what the human being gains? We have got to come in this country to the point at which we get away from class distinction both by the labor department and by everybody else connected with the government. I am speaking now as a private individual. If Mr. Zimmer would know his statistics, he would find that George Washington University, in his own city of Washington, D. C., took blood tests of its students long before there was any industrial program in the United States. He would find, by reading the women's journals, that many women's clubs had blood tests. Association of commerce members have their blood tested by their family physicians. I feel it is a grave injustice to industry for Mr. Zimmer to make the remarks he has made this afternoon.

DR. HARVEY BARTLE, Philadelphia: I am a little favorable to Mr. Zimmer's remarks. I think I have got in contact with labor pretty well in the last thirty-four years. I think the reaction expressed today should have some consideration. However, I should like to call attention to another group who have Wassermann reactions. They are the prospective bridegrooms. I am heartily in favor of routine Wassermann tests for every individual in the United States, irrespective of class. We shall get somewhere then. I don't know that we have a right to demand routine Wassermann tests among laborers any more than we have a right to demand an x-ray examination of the vertebral column or of the chest. We have just as many involvements in industry from those sources. The rehabilitation surgeon, of course, wouldn't want routine roentgenograms of the vertebral column taken because that would rob him of a lucrative practice. But there is an involving issue and, after all, there is a common sense approach to it. *(To be continued)*

ABSTRACT OF MINUTES OF MEETINGS OF BOARD OF TRUSTEES

A two day session of the Board of Trustees was held at the headquarters of the Association on Thursday and Friday, February 15 and 16, preceded by a day and evening session of the Executive Committee on February 14, at which the business of the Association received careful consideration. Space permits only a brief abstract of these deliberations.

APPOINTMENTS

The following appointments were made to editorial boards of special journals and to councils and committees (unless otherwise stated the appointee succeeds himself):

Archives of Surgery, Dr. Evarts A. Graham. *Archives of Ophthalmology*, Dr. Francis Heed Adler. *American Journal of Diseases of Children*, Dr. A. Graeme Mitchell; Dr. Francis Scott Smyth, San Francisco, to succeed Dr. John C. Gittings, resigned. *Archives of Neurology and Psychiatry*, Dr. Stanley Cobb. *Archives of Otolaryngology*, Dr. John F. Barnhill. *Archives of Pathology*, Drs. S. B. Wolbach and Oscar T. Schultz; Dr. George H. Whipple, Rochester, N. Y., to succeed Dr. Alfred Stengel, deceased. *Archives of Dermatology and Syphilology*, Dr. Fred D. Weidman. *Archives of Internal Medicine*, Dr. John H. Musser. COUNCIL ON PHARMACY AND CHEMISTRY, Drs. Morris Fishbein, Perrin H. Long, G. W. McCoy and E. M. Nelson. COUNCIL ON PHYSICAL THERAPY, Drs. Frank R. Ober and Frank D. Dickson; Dr. Eben J. Carey, Milwaukee, to succeed Dr. Howard T. Karsner. COUNCIL ON FOODS, Drs. Morris Fishbein and Irvine McQuarrie. COMMITTEE ON SCIENTIFIC RESEARCH, Dr. Martin H. Fischer; Dr. E. W. Goodpasture, Nashville, Tenn., to succeed Dr. C. C. Bass, resigned. COMMITTEE FOR THE PROTECTION OF MEDICAL RESEARCH, Dr. William J. Kerr and Rev. A. M. Schwitalla.

REPRESENTATIVE ON AMERICAN DOCUMENTATION INSTITUTE

Dr. Ludvig Hektoen was reappointed as representative of the American Medical Association on the American Documentation Institute.

REPRESENTATIVES TO MEETING OF CANADIAN MEDICAL ASSOCIATION

Delegates were selected to represent the American Medical Association at the meeting of the Canadian Medical Association, to be held in Toronto June 17 to 21.

COUNCIL ON INDUSTRIAL HEALTH

The terms of service of members of the Council on Industrial Health, suggested by the Council itself, received the approval of the board.

COMMITTEE ON AMERICAN HEALTH RESORTS

The Board authorized that arrangements be made to proceed with the work of the Committee on American Health Resorts.

APPROPRIATIONS

Appropriations were made for the conduct of the work of the various councils, bureaus and committees, as well as for scientific and therapeutic research.

REQUESTS FOR CUMULATED INDEXES OF SPECIAL JOURNALS

The Board decided not to authorize the publication at this time of cumulated indexes of any of the Association's special journals, since the response to notices published in four of those periodicals was too small to justify the undertaking.

TRANSFER OF INDUSTRIAL HYGIENE FROM UNITED STATES PUBLIC HEALTH SERVICE

The following preambles and resolution adopted by the Council on Industrial Health were approved by the Board:

WHEREAS, It has been brought to the attention of the Council on Industrial Health that certain proposed legislation contemplates the placing of responsibility for the development of industrial hygiene in an agency of the federal government other than that of the United States Public Health Service; and

WHEREAS, This Council believes that the interests of workers in industry will be best served by continuing this activity under the sponsorship of an agency which because of basic training in the broad aspects of industrial health assures attention to the varied interests involved; therefore be it

Resolved, That the Council on Industrial Health bring to the attention of the Board of Trustees matters regarding industrial hygiene incorporated in Senate bills 1620 and 2256, and that it is the sense of the Council that:

1. The interests of the industrial worker will best be served by continued concentration of industrial hygiene in the federal and state health departments, and that these bills as they affect industrial hygiene be opposed; but that

2. Due recognition be given to the desirability for cooperation with, as well as assistance from, other established agencies interested in this field having facilities for regulation and enforcement.

EXHIBITS AT NEW YORK SESSION

Arrangements were approved for the preparation of exhibits of the Council on Medical Education and Hospitals, Council on Pharmacy and Chemistry, Council on Physical Therapy and Council on Industrial Health and of the special journals at the New York session of the Association.

A. M. A. DAY AT NEW YORK WORLD'S FAIR

Arrangements for A. M. A. Day at the New York World's Fair during the New York session received the approval of the Board.

SPECIAL ISSUE OF ARCHIVES OF OPHTHALMOLOGY IN HONOR OF DR. F. H. VERHOEFF

The Board approved the publication of a special issue of the *Archives of Ophthalmology* in honor of Dr. F. H. Verhoeff, Boston, who for a number of years was professor of ophthalmic research at Harvard Medical School, and who recently retired.

INVESTMENTS

Considerable time was devoted by both the Finance Committee and the Board of Trustees to the matter of investing the funds of the Association.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

Tuberculosis Institute.—An Indian Service Tuberculosis Institute was held at the Navajo Medical Center, Fort Defiance, February 12-14, attended by 121 federal, state and county health organization employees. Those conducting the program included Dr. Esmond R. Long and Miss Margaret Smith, of the Henry Phipps Institute of the University of Pennsylvania, Philadelphia; Miss Rosalie Peterson, R.N., of the Office of Indian Affairs, Washington, D. C.; Drs. Ralph B. Snavely, San Francisco; Estella Ford Warner, Albuquerque, N. M., and William W. Peter, Window Rock. Physicians and nurses from eleven Indian agencies in the Southwest also participated in the program. There are three tuberculosis sanatoriums with a bed capacity of 200 for a population of 50,000 Indians on the Navajo reservation of 25,000 square miles; there are also nine general hospitals occasionally admitting tuberculosis patients. Supplementing the work of these twelve institutions, field work, primarily to discover early cases of tuberculosis, is conducted by Dr. Horace P. Mahan, Winslow; Miss Esther Sandstrom, R.N., and Miss Violet Sobers, R.N.

ARKANSAS

Postgraduate Course.—The eighth two day course of postgraduate instruction, sponsored by the state medical society and the University of Arkansas School of Medicine, Little Rock, was held at the medical school, January 24-25. The guest speakers included: Drs. Henry H. Turner, Oklahoma City, on "Hypothyroidism"; Ferdinand C. Helwig, Kansas City, Mo., "Relationship of Trauma to Tumors," and Charles F. Geschickter, Baltimore, "Tumors of Bones." Other speakers, all of Little Rock, were:

Dr. Harvey Shipp, Operative Treatment in Pulmonary Tuberculosis.
Dr. Hoyt R. Allen, Diagnosis and Treatment of Common Ailments of the Rectum and Anal Canal.
Dr. Merlin J. Kilbury, Interpretations of Laboratory Findings.
Dr. Raymond L. Gregory, Frequent Mistakes in the Diagnosis of Cardiovascular Diseases.
Dr. Henry G. Hollenberg, Carcinoma of the Stomach: Its Incidence in Arkansas; Its Early Diagnosis.
Dr. Darmon A. Rhinehart, Methods and Findings in the X-Ray Examination of the Lower Part of the Back.
Dr. Joseph Franklin Shufflefd, Low Back Pain from the Standpoint of the Orthopedic Surgeon.
Dr. Herbert Fay H. Jones, Low Back Pain from the Standpoint of the Urologist.
Dr. Joseph H. Sanderlin, Low Back Pain from the Standpoint of the Gynecologist.

Dr. Helwig addressed the dinner meeting on "Medicolegal Aspects of Alcoholic Intoxication."

DISTRICT OF COLUMBIA

Postgraduate Course in Ophthalmology.—The fourth annual postgraduate course in ophthalmology of George Washington University School of Medicine, Washington, will be held March 25-30. A practical course limited to twenty-five participants in surgery, pathology and orthoptics will be held March 19-23. Additional information may be obtained from the school, 1335 H Street Northwest, Washington.

Health Instruction for Employees.—The District Works Projects Administration opened a six weeks' health institute, January 15, to provide instruction in the essential facts of everyday health problems for 3,700 employees of its professional and service divisions, according to *Medical Annals.* Cooperating with the WPA are the district health department, the speakers' bureau of the Medical Society of the District of Columbia and the Medico-Chirurgical Society.

Postgraduate Courses.—The committee on postgraduate education of the Medical Society of the District of Columbia is conducting a series of postgraduate courses. The first group of lectures constituted a course on syphilology with the following speakers: Dr. John A. Kolmer, Philadelphia, January 15, on "Principles in Diagnosis and Treatment of Syphilis" and Reuben L. Kahn, Sc.D., Ann Arbor, Mich., January 22, "Interpreting Serologic Reactions in Syphilis." Other subjects to be covered in subsequent courses, provided the interest is sufficient, include psychoneuroses in general practice, office surgical procedures, cutaneous diseases in general practice, obscure fevers and preventive pediatrics.

Society News.—Dr. Raymond L. Pfeiffer, New York, discussed "Lesions of Chiasm" before the Washington Ophthalmological Society, February 12.——At a meeting of the George Washington University Medical Society, January 20, Dr. William Wayne Babcock, Philadelphia, discussed abdominal surgery.——Lyman J. Briggs, Ph.D., director of the bureau of standards, discussed "Developments in Modern Physics and Their Relation to Medicine" before the Academy of Medicine of Washington, February 29.——Dr. Hugo Roesler, Philadelphia, will discuss "Roentgenological Aspects of Cardiovascular Disease" before the Washington Heart Association, April 10.——At a meeting of the Washington Society of Pathologists, January 6, the speakers included Drs. Harold E. Ragle on "Tumor of the Sacrococcygeal Region" and Janvier W. Lindsay, "Carcinoma of the Esophagus; Early Carcinoma of the Larynx."

ILLINOIS

Personal.—Dr. Edward F. Dombrowski, managing officer of the Chicago State Hospital, was recently made president of the Conference of Managing Officers of the state department of public welfare.——Dr. Eugene J. Chesrow, Chicago, has been appointed superintendent of the Oak Forest Infirmary, newspapers reported.——The McDonough County Medical Society recently presented to Dr. Elizabeth R. Miner, Macomb, a check as a token of its appreciation of her work as secretary of the society for the last fifteen years. Dr. Miner was elected for life to this office but has resigned. She and her husband will spend their winters in Florida. She has been delegate to the state medical society for twenty years and has held every office in the county society as well as the office of second vice president of the state society.

Chicago

Midwinter Clinical Meeting.—The South Side Medical Assembly, the annual midwinter clinical meeting of the Calumet, South Chicago, South Side, Southern Cook County and Stock Yards branches of the Chicago Medical Society, was held, February 14. Sessions were devoted to discussions of pneumonia, modern treatment of urologic diseases, sulfanilamide and its compounds, obstetrics, cancer, hormones, fractures and cardiac diseases.

Dr. Bacon Honored.—A testimonial dinner was held in honor of Dr. Charles Sumner Bacon, February 6, in recognition of his sixteen years' service as chief of staff at the Booth Memorial Hospital, which is under the auspices of the Salvation Army. He is 83 years of age. The hospital cares for unwed mothers and their babies. Services of the staff are volunteered. Dr. Bacon, who graduated at Northwestern University Medical School in 1884, served as professor and head of the department of gynecology and obstetrics at the University of Illinois College of Medicine for many years and has been emeritus professor since 1926. He was president of the Illinois State Medical Society, 1905-1906, and of the Chicago Gynecological Society, 1902-1903 and 1923-1924. The Bacon lectures at the University of Illinois are named in his honor.

Society News.—The Chicago Society of Internal Medicine was addressed, January 22, by Drs. Robert G. Bloch and Abraham J. Kauvar on "Schaumann's Disease (Boeck's Sarcoid)"; Henry T. Ricketts, "The Constancy of Action of Protamine Zinc Insulin," and James G. Carr, Alexander Saunders and Gilbert H. Marquardt, "Studies of Angina Pectoris."——A symposium on syphilis constituted the program of the Chicago Laryngological and Otological Society, February 5; the speakers were Drs. Lawrence J. Lawson, Evanston; John F. Delph, Francis E. Senear, James H. Mitchell, Samuel J. Pearlman and Joseph Welfeld.——Among others, Drs. Roland S. Cron, Harold W. Shutter and Albert H. Lahmann, Milwaukee, discussed "Epidemic Infectious Diarrhea of the Newborn" before the Chicago Gynecological Society, February 16.——Among others, Dr. Walter P. Blount, Milwaukee, addressed the Chicago Orthopaedic Society, February 9, on "Osteotomy of the Humerus in the Treatment of Obstetrical Shoulder Lesions."

KANSAS

New Director of Tuberculosis Control.—Dr. Floyd C. Beelman, Wichita, for three years health officer of Sedgwick County, has accepted the position of director of the division of tuberculosis control of the Kansas State Board of Health. Dr. Henry H. Asher has succeeded Dr. Beelman in Sedgwick County.

University News.—Dr. John F. Fulton, New Haven, Conn., lectured at the Museum of Medical History, University of Kansas Hospitals, Kansas City, February 5, on "The History

of Physiology." Dr. Franklin G. Ebaugh, Denver, delivered the William W. Root Lecture, February 9, on "The Psychoneuroses in the General Practice of Medicine."

Annual Postgraduate Clinics.—The University of Kansas School of Medicine will hold its annual postgraduate clinics March 18-21. Presentation of clinical cases with emphasis on therapy will be a feature of the courses. An effort will be made to demonstrate therapeutic procedures that the general practitioner can apply to his office practice. Additional information may be obtained from Dr. Hugh L. Dwyer, chairman, committee on postgraduate clinics, University of Kansas School of Medicine, Kansas City.

MARYLAND

Dr. Lomas Resigns from University Hospital.—Dr. Arthur J. Lomas has resigned as head of the University Hospital, Baltimore, after holding the position for sixteen years, according to *Modern Hospital*. He plans to serve as administrative consultant to five Catholic hospitals in Maryland: Mercy, St. Joseph's, Bon Secours and St. Agnes hospitals, all of Baltimore, and the Allegany Hospital, Cumberland. Dr. John E. Savage is acting medical superintendent of the University Hospital.

Society News.—A joint meeting of the Baltimore City Medical Society and its radiologic section was addressed, March 1, by Dr. William P. Healy, New York, on "Radiation and Surgery in the Treatment of Carcinoma of the Uterine Cervix and of the Corpus." The society will be addressed, March 15, by Drs. Tibor de Cholnoky, New York, on "Rehabilitation in Advanced Cancer," and Alston E. Morrison, "Diagnosis of Nonopaque Foreign Bodies in the Lower Respiratory Tract."——The Osler Historical Club was addressed in Baltimore, March 12, by Dr. Frederik B. Bang, Baltimore, on "Influence of Bacteriologic Discoveries on the Epidemiologic Theories of the Nineteenth Century," and Dr. John McW. McDonald, "Life and Works of Ramazzini."——Dr. Arthur M. Shipley discussed "Treatment of Gunshot and Stab Wounds of Chest and Abdomen" in a clinic before the Howard County Medical Society in Baltimore, January 23.

MINNESOTA

Personal.—Dr. Harold S. Diehl, dean of medical sciences, University of Minnesota Medical School, Minneapolis, has been appointed a member of the National Advisory Health Council of the U. S. Public Health Service.

Society News.—A symposium on painful conditions about the head and face was presented before the Ramsey County Medical Society, February 26, in St. Paul, by Drs. Gordon R. Kamman, Gordon E. Strate and Wallace P. Ritchie, St. Paul. ——The Minnesota Pathological Society was addressed in Minneapolis, February 20, by Drs. James S. McCartney on "Dissecting Aneurysm of the Aorta" and Lawrence Berman, "Cancer as a Cause of Death in Minnesota."

MISSOURI

Society News.—Dr. Allen O. Whipple, New York, will discuss application of chemistry to the preoperative and postoperative care of surgical patients before the Kansas City Academy of Medicine, March 15.——Dr. Irwin I. Rosenthal, St. Joseph, addressed the Buchanan County Medical Society in St. Joseph, February 7, on "Recent Advances in Anesthesia."——The Kansas City Society of Ophthalmology, Otology, Rhinology and Laryngology was addressed, January 18, by Drs. Harry S. Gradle, Chicago; Norton Canfield, New Haven, Conn., Andrew A. Eggston, New York, and Walter Hughson, Abington, Pa. Drs. Gradle and Eggston addressed the dinner meeting on "Glaucoma Capsulare" and "Pathology of Mastoiditis, Petrositis and Meningitis" respectively.——At a meeting of the Kansas City Obstetrical and Gynecological Society, January 11, the speakers were Drs. Richard G. Helman on "The Undilated Cervix"; Herbert F. Vanorden, "Term Delivery in a Patient with Deformed Pelvis Caused by Multiple Fractures," and Joseph G. Webster, "Case of Toxemia of Pregnancy."

Pneumonia Control Program.—The state department of health recently has begun a program to control pneumonia. At present the program will be limited to the eight counties maintaining full time public health units but will be extended into other parts of the state as soon as facilities permit. In January, the department furnished the local units with materials for typing and sulfapyridine and antipneumococcic serums for treatment. Physicians may receive the drugs for use in indigent cases. This year Missouri received government funds for pneumonia control work. Regional conferences of public health personnel were held in December to explain the new program with Dr. Henry A. Holle, regional consultant in pneumonia, U. S. Public Health Service, showing films on diagnosis and therapy.

Medicomilitary Symposium.—The annual spring medicomilitary symposium will be in the Jackson County Medical Society's Auditorium in the Municipal General Hospital, Kansas City, March 14-15. The program lists the following guest speakers:

Dr. Ralph A. Kinsella, St. Louis, Physical Diagnosis in Acute Diseases of the Chest.
Dr. Hiram Winnett Orr, Lincoln, Neb., Relationship of Wound Treatment to the Care of Compound Fractures.
Dr. Alfred I. Folsom, Dallas, Texas, Some Overlooked Facts in the Treatment of Chronic Gonorrhea.
Dr. Arthur A. Zierold, Minneapolis, Head Injuries.
Dr. Walter A. Carlson, Randolph Field, Texas, Aviation and Its Medical Problems.
Dr. Frederick A. Jostes, St. Louis, Conservative Treatment of Low Back Disability.

A joint meeting with the Jackson and Wyandotte county medical societies will be held March 14.

MONTANA

Tularemia Infection in Streams.—The staff of the Rocky Mountain Laboratory of the U. S. Public Health Service recently reported that three Montana streams have been found to be contaminated with Bacterium tularense. The discovery was made in the course of studies of epizootic tularemia in beaver. Two of the streams are flowing creeks and the other at certain times of the year consists of a succession of pools. Three samples taken over a period of twenty-eight days showed contamination and guinea-pigs that received the water became infected.

NEW JERSEY

Society News.—Dr. Arthur M. Fishberg, New York, addressed the Hudson County Medical Society, Jersey City, February 6, on "Recent Advances in Cardiovascular-Renal Diseases."——Dr. Edward W. Sprague, Newark, was elected president of the Society of Surgeons of New Jersey at the annual meeting in Camden, January 31.——Dr. Priscilla White, Boston, addressed the Atlantic County Medical Society, Atlantic City, February 9, on recent advances in diabetes.——Dr. E. Arthur Whitney, Elwyn, Pa., addressed the Cumberland County Medical Society, Vineland, February 13, on "Medical Aspects of the Care of the Feebleminded."——Dr. Paul Geary, Plainfield, addressed the Morris County Medical Society, Morris Plains, February 15, on "Nontuberculous Pulmonary Abscess."

NEW YORK

Personal.—Dr. Harvey S. Kinne, Albany, recently an assistant district health officer on the staff of the state health department, has been appointed health commissioner of Cortland County.

Society News.—Dr. Burrill B. Crohn, New York, addressed the Medical Society of the County of Albany in Albany, February 28, on peptic ulcer.——Dr. Lewis M. Hurxthal, Boston, addressed the Dutchess County Medical Society, Poughkeepsie, February 14, on endocrinology.——Dr. Edward G. Waters, Jersey City, N. J., addressed the Onondaga County Medical Society, Syracuse, March 5, on "Injuries to the Birth Canal During Parturition."

New York City

Dr. Barringer Honored.—Dr. Emily Dunning Barringer was honored with a dinner, March 2, by the staff of the Kingston Avenue Hospital on the occasion of her retirement as director of gynecology after twenty-one years of service. Speakers were to include: Drs. Terry M. Townsend, president of the Medical Society of the State of New York; Nathan B. Van Etten, President-Elect of the American Medical Association; Sigismund S. Goldwater, commissioner of hospitals; Elise D. S. L'Esperance, of the New York Infirmary for Women and Children; Thurman B. Givan, visiting physician, and Hyman Strauss, visiting gynecologist, Kingston Avenue Hospital; Anna W. Williams, former assistant director of laboratories, New York City Health Department; Robert M. Lewis, associate clinical professor of obstetrics and gynecology, Yale University School of Medicine, New Haven, Conn.; Miss Julia K. Jaffray, secretary of the National Committee on Prisons and Prison Labor; Hon. Anna M. Krose, city magistrate, and Dr. Barringer.

Society News.—Drs. Josephine B. Neal and Joseph J. Bunim addressed the Medical Society of the County of New York, February 26, on "Chemotherapy in Meningitis" and "Use of Sulfapyridine in Treatment of Pneumococcus Pneumonia" respectively.——At a meeting of the New York chapter of the National Gastroenterological Association, February 19, the staff of Memorial Hospital for the Treatment of Cancer and Allied Diseases presented a symposium on gastric cancer. The speakers were Drs. James Ewing, Cornelius P. Rhoads, Gordon P. McNeer, Juan M. Jimenez, George T. Pack and Edward M. Livingston.——Drs. Dana W. Atchley, New York, and Frederick A. Coller, Ann Arbor, Mich., addressed the New York Academy of Medicine, March 7, on medical and surgical considerations, respectively, of "Clinical Manifestations and Management of Disturbances in Water Metabolism." Dr. John P. Peters, New Haven, Conn., was a discussant.——At a combined meeting of the section of neurology and psychiatry of the New York Academy of Medicine and the New York Neurological Society, March 12, Dr. Eli Jefferson Browder will speak on "Spinal Epidural Infections: Surgical and Pathological Consideration" and Dr. Francis A. Echlin, Montreal, Que., "Focal Cerebral Ischemia and Reactive Gliosis Following Experimental Vascular Spasm."

OHIO

Inter-County Meetings.—The Erie County Medical Society is presenting its second series of clinical lectures in Sandusky, with members of adjacent county societies as guests. Following is the series:

January 17, Dr. Henry J. John, Cleveland, Principles of Treatment of Diabetes.
February 14, Dr. Clarence W. Engler, Cleveland, Sinusitis.
March 13, Dr. James L. Reyeraft, Cleveland, Operative Treatment of Uterine Prolapse, Cystocele and Rectocele.
April 17, (1) Dr. Walter G. Stern, Cleveland, Is Prepaid Medical Insurance Necessary Today? If So, A Practical Plan for Same; The Estimation of Disability Following Injury, and (2) Milton Landy, referee of the State Industrial Commission, The Legal Phase of Statewide Prepaid Medical Insurance.

Society News.—Dr. James L. Wade, Parkersburg, W. Va., addressed the Washington County Medical Society, Marietta, January 10, on myasthenia gravis.——Drs. Carl E. Evans and John E. Hendricks, Newark, addressed the Tuscarawas County Medical Society, Newark, January 11, on "Surgical Considerations of the Abdominal Cavity" and "Removing Foreign Bodies from the Lungs" respectively.——Dr. Charles R. Austrian, Baltimore, addressed the Academy of Medicine of Cleveland, February 16, on "Chronic Nontuberculous Infections of the Lungs."——Dr. Leroy U. Gardner, Saranac Lake, N. Y., addressed the Academy of Medicine of Cincinnati, February 20, on "Pneumoconiosis."——Dr. Robert L. Schaefer, Detroit, addressed the Summit County Medical Society, Akron, February 6, on "Diagnostic and Therapeutic Endocrine Facts of Value to Patient and Physician."

OREGON

Dr. Kinney's Ninetieth Birthday.—Dr. Alfred C. Kinney, Seaview, Wash., first and fiftieth president of the Oregon State Medical Society, was entertained at a luncheon in Portland, January 30, planned and attended by the four other surviving members of the first state board of health, celebrating his ninetieth birthday. Dr. Kinney related that the bill creating the board of health was written by Dr. Oliver Wendell Holmes. While studying in Massachusetts, Dr. Kinney met Dr. Holmes, brought the bill, modeled on the Massachusetts statute, home in his pocket and gave it to a legislator for introduction in 1872. It was not enacted, however, until 1903. The other original members who attended the luncheon were Drs. Andrew C. Smith, Charles J. Smith, Edward Allen Pierce, Portland, and Willis B. Morse, Salem.

Society News.—A symposium on "Fluid Administration by Parenteral Methods" was presented before the Multnomah County Medical Society, Portland, February 21, by Drs. Albert W. Holman, Louis P. Gambee, Homer P. Rush and Thomas D. Robertson.——Dr. Simeon T. Cantril, Seattle, addressed the Lane County Medical Society, Eugene, February 16, on radiation therapy.——Dr. Chester A. Bump, Newberg, discussed treatment of burns at a meeting of the Yamhill County Medical Society, McMinnville, February 6.——The Umatilla County Medical Society was recently reorganized with Dr. Joseph P. Brennan, Pendleton, as president and Dr. Theodore M. Barber, Pendleton, secretary. At a meeting, February 13, Dr. Richard H. Wilcox, Pendleton, county health officer, spoke on "Regulations Pertaining to Communicable Diseases" and W. C. Perry, attorney, on "The Doctor on the Witness Stand."——Dr. Laurence Selling, Portland, addressed the Polk-Yamhill-Marion Counties Medical Society in Salem, February 13, on "Herniation of the Intervertebral Disk" and "Hypertrophy of the Ligamentum Flavum."

PENNSYLVANIA

Advisory Health Board Appointed.—Gov. Arthur H. James recently appointed new members of the advisory board to the state department of health. The appointees were Drs. George Morris Piersol, professor of medicine, University of Pennsylvania Graduate School of Medicine, Philadelphia; David W. Thomas, Lock Haven, president of the Medical Society of the State of Pennsylvania; William Gray Turnbull, superintendent of the Philadelphia General Hospital; Donald Guthrie, chief surgeon of the Packer Hospital, Sayre; Ivor Griffith, Pharm.D., dean of the Philadelphia College of Pharmacy and Science, and Archibald Nance, Pittsburgh, a civil engineer.

Philadelphia

Personal.—Dr. Basil R. Beltran has resigned as medical director and chief surgeon of the Eastern State Penitentiary to devote his time to his work as surgeon in chief at Nazareth Hospital, which was to be opened for patients on March 7.

Hospital News.—Temple University Hospital dedicated a new floor and other improvements in the building, February 14. The new fifth floor has thirty-three rooms, principally for maternity patients. Operating rooms have been air conditioned, and soundproofing was placed in private and semiprivate rooms and in corridors.

More Gifts to the University.—The University of Pennsylvania recently announced additional gifts to its bicentennial fund. Among those for medical purposes are the following:

Eldridge R. Johnson, $10,000 for the Johnson Foundation for Research in Medical Physics, which he established.
Mrs. Arthur W. Thompson, $6,000 to the Thompson Vitamin Research Fund.
National Committee on Maternal Health, $3,000.
National Tuberculosis Association, $2,287.
Rockefeller Foundation, $2,650.
Josiah Macy Jr., Foundation, $1,500.
Mead Johnson & Co., $1,500.
International Cancer Research Foundation, $1,334.
John Frederick Lewis Jr., Philadelphia attorney, $25,000 added to a previous gift of $25,000 by Mr. Lewis and his brother to provide a floor for ophthalmology in the new hospital unit now under construction.
Mrs. Lewis H. Adler, $1,000, and Miss Julia Lewis, $600 for the department of ophthalmology.

SOUTH CAROLINA

Society News.—Dr. Joseph M. Feder addressed the Anderson County Medical Society, Anderson, January 10, on "Investigation of Hepatic Function and the Evaluation of Vitamin K Therapy."——Dr. De Forest C. Jarvis, Barre, Vt., addressed the Greenville County Medical Society, Greenville, January 10, on "Biochemistry in Everyday Medicine from a Research Group Study." Drs. Richard W. TeLinde, Baltimore, and George R. Wilkinson, Greenville, addressed the society, February 5, on "Organic Causes of Uterine Bleeding."——Dr. Wells P. Eagleton, Newark, N. J., addressed the Columbia Medical Society, January 8, on "A Philosophical Review of the Advances in the Treatment of Meningitis."——Dr. Frank P. Coleman, Columbia, addressed the Edisto Medical Society, Orangeburg, January 24, on "Water Balance in the Medically and Surgically Sick."——Dr. Julian M. Ruffin, Durham, N. C., addressed the Medical Society of South Carolina, Charleston, January 9, on "Gastroscopy."——At a meeting of the Oconee County Medical Society in Seneca, January 4, Dr. Wofford E. Baldwin, Walhalla, county health officer, discussed a plan to establish contraceptive clinics and the syphilis control campaign, and Dr. Rowland F. Zeigler Jr., Seneca, led a round table discussion on sulfapyridine treatment of pneumonia.

TEXAS

Hospital News.—Colonel and Mrs. J. W. Neal, Houston, recently established a trust fund of $100,000 for Memorial Hospital, Houston, as a memorial to their son who died recently. The interest is to be used to provide x-ray treatment for those unable to pay for it.

New Health Officers.—Dr. Clark E. Phillips, Orange, has been appointed health officer of Orange County to succeed the late Dr. Jefferson D. Yates.——Dr. Cecil G. Yarbrough Jr., Midland, has been appointed health officer of a new Midland city and county health unit.

Personal.—Dr. and Mrs. Robert W. Noble, Temple, recently celebrated their golden wedding anniversary. Dr. Noble was formerly a member of the state board of health and has been health officer of Temple for many years, according to the *Texas State Journal of Medicine*.——Dr. Green L. Davidson, Wharton, was recently elected president for life of the Wharton-Jackson Counties Medical Society.

Special Society Meeting.—Dr. James W. Ward, Greenville, was elected president of the Texas Ophthalmological and Otolaryngological Society at its annual meeting in Houston recently. The guest speakers were Drs. Dean M. Lierle, Iowa City, who discussed "Surgical Sinusitis" and "Vertigo," and Daniel B. Kirby, New York, "Difficulties During Cataract Extractions" and "Difficulties After Cataract Extractions."

UTAH

A Case of Plague.—The U. S. Public Health Service was informed, February 6, of a case of bubonic plague in Utah. The disease was in a man aged 29 who was thought to have been infected when skinning a coyote.

GENERAL

New Officers of National Health Council.—Dr. Kendall Emerson, managing director of the National Tuberculosis Association, New York, has been elected president of the National Health Council, it was announced, February 21. Dr. Reginald M. Atwater, executive secretary of the American Public Health Association, is the new vice president and Miss Dorothy Deming, general director of the National Organization for Public Health Nursing, secretary.

Film on Hearing Aids.—"Life Begins Again" is the title of a motion picture prepared by the Western Electric Company to demonstrate the possibilities of aid to persons with hearing defects. The picture dwells particularly on problems in school children and shows the correct procedure for discovering deficiencies in hearing by means of the audiometer. Included in the film is an animated sequence which demonstrates how the human auditory system works. Theaters may obtain the film without charge.

General Pershing Receives Snow Medal.—General John J. Pershing was awarded the William Freeman Snow Medal for distinguished service to mankind at the annual meeting of the American Social Hygiene Association in Chicago, February 1. Major Gen. Merritte W. Ireland, former surgeon general, U. S. Army, made the presentation and General Pershing accepted by telephone from Tucson, Ariz. General Pershing was the first chairman and one of the founders of the national antisyphilis committee sponsored by the social hygiene association in 1937. This is the third presentation of the medal, which honors Dr. Snow for his long service as general director of the association.

Pacific Coast Surgical Meeting.—The annual meeting of the Pacific Coast Surgical Association will be held in Portland, Ore., April 3-6, under the presidency of Dr. Richard B. Dillehunt, Portland. The guest speakers will be:

Dr. Andrew A. Matthews, Spokane, Wash., Cancer of the Breast.
Dr. Albert J. Scholl, Los Angeles, Ureteral Stones, A Nonsurgical Method of Treatment.
Dr. Herbert S. Chapman, Stockton, Calif., Unusual Tumors of the Endocrine System.
Dr. Robertson Ward, San Francisco, Appendicitis with Complications; Reduction of Mortality by Continuous Gastric Lavage.
Dr. Charles T. Sturgeon, Los Angeles, Pulsion Diverticula of the Hypopharynx.

Courses Sponsored by College of Physicians.—The American College of Physicians announces its third annual series of courses for its fellows and associates, arranged through the cooperation of the directors and the institutions at which the courses are given. The courses are as follows:

General medicine, University of Michigan Medical School and Hospital, Ann Arbor, Dr. Cyrus C. Sturgis, director, March 18-30.
Medicine in industry, Henry Ford Hospital, Detroit, Dr. Frank J. Sladen, director, March 25-30.
Allergy, Roosevelt Hospital, New York, Dr. Robert A. Cooke, director, March 19-30.
The blood and the blood cell forming organs in disease, Ohio State University College of Medicine, Columbus, Dr. Charles A. Doan, director, March 25-29.
Cardiovascular disease, State University of Iowa College of Medicine, Iowa City, Dr. Fred M. Smith, director, March 25-30.

League Against Rheumatism Not Dissolved.—Although the bureau of the Ligue internationale contre le rhumatisme in Amsterdam has been closed, as previously announced in THE JOURNAL (Nov. 11, 1939, page 1821), it is announced by the president, Dr. Ralph Pemberton, Philadelphia, that the league is not dissolved and that the present structure and personnel of the league should be maintained for the duration of the war, ready to resume activities as soon as circumstances permit. Formal dissolution of such a body as the league must depend on formal action by its constituent members or a body acting for them, and this step has not been taken.

Societies for Experimental Biology.—The Federation of American Societies for Experimental Biology will hold its annual meeting at the Roosevelt Hotel, New Orleans, March 13-16. The federation is composed of the American Physiological Society, the American Society of Biological Chemists, Inc., the American Society for Pharmacology and Experimental Therapeutics, Inc., and the American Society for Experimental Pathology. The scientific session will open with a joint meeting. Symposiums held in the various sections will include the following subjects: blood coagulation, muscle, biochemistry of the lipids; hormones; tissue respiration; stable and radioactive isotopes as tracers in biologic research; recent advances in therapeutics. The annual dinner will be Friday evening and business meetings of all societies will be held Thursday and Friday.

Government Services

General Marietta Appointed Assistant Surgeon General

Brig. Gen. Shelley U. Marietta, Medical Corps, U. S. Army, has been appointed assistant to the Surgeon General of the Army. General Marietta was graduated from the University of Illinois School of Medicine, Chicago, in 1909 and from the Army Medical School in 1912. He has served at various stations in the United States, in the Philippine Islands, in France and in Hawaii.

New Members of Veterans' Medical Council

At a recent conference of the Medical Council, Veterans' Administration, the following were elected new members: Drs. Alfred W. Adson, Rochester, Minn.; John Alexander, Ann Arbor, Mich.; John S. Coulter, Chicago; Kendall Emerson and Frederick W. Parsons, New York; Elliott P. Joslin and Harry C. Solomon, Boston; David R. Lyman, New Haven, Conn.; James A. Lyon, Edwin A. Merritt and Winfred Overholser, Washington, D. C., and Lowell J. Reed, Ph.D., Baltimore. A new group, counselors emeritus, was created, composed of Drs. Edward R. Baldwin, Saranac Lake, N. Y.; Sigismund S. Goldwater, New York; Allen K. Krause, Dean Lewis and Winford H. Smith, Baltimore; Joseph W. Schereschewsky, Atlanta, Ga., and Ray Lyman Wilbur, Stanford University, Calif.

Medical Division Established in Federal Trade Commission

Announcement was made, February 8, of the establishment of a medical advisory division in the Federal Trade Commission in Washington to have the same status as other divisions. The director of the new unit will be Dr. Knox E. Miller, senior surgeon, U. S. Public Health Service, who has been on duty with the commission since 1938 as technical consultant to advise on medical and other claims made in advertising of foods, drugs and cosmetics. The medical advisory division will take the place of the medical advisory section and the following personnel in the advisory section has been transferred to the division: Drs. Miller, Charles F. Church and Frederick C. Warnshuis, Miss Beatrice Ruffin and Mrs. Frances Tatum. The change was effective immediately.

Military Medicodental Training Course

The third annual military medicodental training course at Chicago for medical department reserve officers will be held by the sixth corps area March 31-April 13. The course will be conducted under the direction of the corps area surgeon, Col. Paul W. Gibson, with the cooperation of the medical and dental schools of Illinois, Chicago, Loyola and Northwestern universities. It is designed to increase the military and professional proficiency of reserve officers of the medical, dental, veterinary and medical administrative corps. The morning hours will be devoted to professional work in the schools, hospitals and clinics connected with the participating universities. The afternoon and special evening sessions will be devoted to problems connected with the operation and functioning of the medical service in war. The military courses for the current year will be especially concerned with problems of mobilization as they affect the medical department of the army.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 3, 1940.

A Medical Library for the Army in France

The blood transfusion service and surgical research service of the army were initiated by the Royal College of Surgeons through the conservator, Col. John Beattie, and are under his direction. There is a unit in France with its research laboratory, which is under the control of the pathologic curator of the college, and twelve of the college staff work in the laboratory. Colonel Beattie has reported that the unit in France is handicapped by lack of current medical and scientific periodicals. In view of the relations of the college to the army blood transfusion service it has been suggested that the council might establish a library of current periodicals for the use of the unit in France. The *British Medical Journal* has gone further and pointed out that the suggestion of a library for research workers leads directly to the wider possibility—a reference library, which should be available to all officers of the medical service in France.

Tuberculous Patients in Wartime

A previous letter noted the trouble which has arisen from the discharge of tuberculous patients from sanatoriums to make room for the large number of casualties expected from air raids. Mr. Walter Elliot, minister of health, has received a deputation on the subject from the Socialist Medical Association. Referring to the complaint that on the outbreak of war patients had been sent home from sanatoriums when not in a fit state for discharge, he said that this could have arisen only from a misunderstanding of the instructions issued by the ministry. The desire was that every tuberculous patient in need of inpatient treatment should receive it, and instructions had been given to that effect. Since November 1, 125 tuberculous institutions had been released from their obligations to the Emergency Medical Service so that they might devote all their accommodation to their normal functions. More than two thirds of the 28,000 beds provided for the treatment of tuberculosis in England and Wales were still available for that purpose. Since about 3,000 were vacant, the admission of new cases should not present any difficulty.

American Offers of Help for the Wounded

Since the outbreak of war the British medical authorities have received generous offers of help from the United States. Some came from official organizations like the American Red Cross, others from groups of sympathizers with the allied cause and others from individuals. They included offers to establish hospitals in France or England and to provide surgical teams or ambulances and medical equipment. The medical service of the British army has had constantly in mind the experience of the last war and has made plans to deal with the maximum number of casualties calculated by the general staff on the basis of the extent and nature of the military operations to be undertaken, with an ample margin of reserve. Accordingly, every contingent of troops leaving our shores is accompanied by its allotted quota of military hospitals, on the scale laid down, while medical reserves of every description are held in both France and England to meet eventualities.

For the present, therefore, the proffered American help would be most useful not in the form of organized hospitals or of personnel but in the provision of extra medical equipment and stores, including motor ambulance transport, or of funds for the purchase of such supplies and materials. There is an ample supply of British physicians and surgeons of the highest attainments in every specialized branch; indeed, only a proportion of those who have offered their services could be accepted. Later in the war, when the reserves of hospital accommodation and of medical personnel may be fully drawn on, reinforcements from America would be gratefully received, without overlapping of effort.

The Radiation Treatment of Metastases

At the Section of Radiology of the Royal Society of Medicine, Dr. F. M. Allchin opened a discussion on the treatment of metastases. He said that the attack on them was the crucial point in the treatment of cancer. It was generally acknowledged that in its early stages cancer was a localized disease and could be combated by accepted methods, among which radiotherapy was of increasing importance. To obtain the best results in the treatment of metastases, all forms of treatment should be considered and sometimes two or three forms of radium treatment should be combined. Investigation of the state of the blood before treatment was begun and at regular intervals was important. Sterilization of women under the age of the menopause was of the utmost importance in cases of cancer of the breast. Metastases from breast cancer were always sensitive to radiation, while those from the prostate or the kidney varied in their response. In breast deposits a satisfactory result could often be obtained from small doses, and in his experience large doses were not called for. The scanty literature on the subject suggested that metastases were less responsive to full radiation doses than the primary growth. The response depended, among other factors, on the histologic structure, but in many cases no prediction as to response could be made. Treatment should aim at full doses consistent with the general condition of the patient.

Dr. M. C. Tod said that the methods which might be considered curative were regional therapy for tumors of high sensitivity and localized therapy for those of limited sensitivity. Tumors of high sensitivity were those of embryonal origin, such as seminoma; primitive tumors of unknown origin, such as Wilm's tumor of the kidney; some tumors of the thyroid, salivary glands and nasal accessory sinuses, and tumors of reticulo-endothelial origin, such as lymphosarcoma, thymoma, Ewing's tumor and vascular endothelioma. For highly sensitive tumors, x-ray radiation was always the method of choice. There were four methods of palliation: (1) localized therapy for single sensitive deposits when more foci were present; (2) a growth-restraint technic for resistant tumors; (3) a "chasing technic" (individual treatment of a series of secondaries as they appeared) for secondaries following radical operation for cancer of the breast; (4) symptomatic palliative therapy.

Dr. N. S. Finzi said that in the technic now being followed by Dr. W. M. Levin at St. Bartholomew's Hospital the whole of the trunk was irradiated for some very sensitive deposits, and some striking results were occasionally secured. A number of the patients had now lived five years after treatment of generalized deposits of various radiosensitive tumors. It must not be supposed that there was any high proportion of cures in metastatic cases, but cures did occur.

Electrically Induced Convulsions

Electrically induced convulsions were discussed at the Section of Psychiatry of the Royal Society of Medicine. Dr. Grey Walter read a paper by himself, F. L. Golla and G. Fleming, from the Burden Neurological Institute. He said that during operations in which the brain was exposed a current of from 5 to 10 milliamperes evoked a response but that a hundred times that strength would have to be applied through the scalp. The ordinary 50 cycle alternating current from the mains provided an adequate stimulus that seemed to do no damage. If the first shock failed to produce a major seizure a second might succeed. The electromyographic record was much the same as the records obtained in spontaneous and metrazol convulsions.

Dr. Fleming added some details from the clinical side. At first sight electrically induced convulsions appeared to resemble epilepsy, but there was one important difference: the shock was followed by an immediate start or convulsive movement in all four extremities and then the tonic followed by the clonic phases of the epileptic convulsions occurred. The great objection to metrazol therapy was the latent period before the evocation of the fit, during which the patient was in a condition of intense terror. In the electrically induced seizure there was complete amnesia from the moment of the shock to the end of the convulsions. Again, the intense clonus of the metrazol fit was never observed. Of curative effects he preferred to say nothing at present. But just as with metrazol, some marvelous recoveries had been observed, although the time had not arrived for any assessment of value.

Dr. W. H. Sheply gave his experience in fifty cases treated. The conditions included schizophrenia, agitated melancholia, recurrent mania and hysteria. Some of the patients who had remained well on a maintenance dose (fortnightly) of metrazol showed the same response to electrical therapy. Advantages were removal of anticipatory fear and absence of after-symptoms such as vomiting, confusion and excitement.

Dr. C. R. Birnie took a skeptical view. He objected to the use of the term "therapy" for what was only an interesting piece of research. When metrazol therapy was brought forward at the same section he was one of the few who sounded a note of warning, which had been justified by the recent careful work done in America. An expert committee considered a large number of cases from the point of view of recovery and found that the results were no better than the normal remission rate. This was what psychiatrists might expect. The psychoses which they tried to treat were complicated by the reaction of the personality to the environment. They probably represented the attempt of a failing organism to make an adaptation which must be imperfect. The inhibitions, stupor and depression in many types of schizophrenia were attempts by nature to repress certain unconscious urges with which consciousness was unable to deal. The convulsive treatment released these urges, with which consciousness was no better able to deal than before the treatment.

PARIS

(From Our Regular Correspondent)

Jan. 28, 1940.

War Wounds and Micro-Organisms

Levaditi and his collaborators, relying on observations during the war of 1914-1918, emphasize the frequency of war wound infections by anaerobic germs. He compares the results obtained twenty-five years ago with those of wounds in the present war. In an investigation of all species of micro-organisms found in wounds made by him in the army zone and in the hospitals evacuated for war purposes, 317 samples were taken. The results of this study were presented to the medical academy. Present observations, he said, do not differ much from those taken twenty-five years ago. Thirty-two per cent of the wounds harbored three kinds of micro-organisms, nineteen a single species, nineteen others four species, and twenty-three two, five or six species. Seven were sterile. The species most generally observed were staphylococci (85 per cent), Friedländer's bacillus, Clostridium welchii, streptococci, the coli group, the enterococcus and Bacillus pyocyaneus. The streptococci showed an increase from 19 per cent in 1917 to 58 per cent in the present count.

The treatment of these infections was improved by the discovery of the azo derivatives, administered orally and in the dressings or by the two methods combined. The intravenous injection of 0.15 Gm. every other day of neoarsphenamine had induced, he said, a more active process of cicatrization. However, it had no noteworthy effect on the microbial curves. Levaditi isolated twelve stocks of streptococci in the pure state. They were all facultative anaerobes and generally of feeble virulence. Strong doses of p-aminophenylsulfamides applied in situ, in powder form or in glycerin, have had a remarkable prophylactic effect, confirmed by Perrin Long, of Johns Hopkins University. This drug constitutes both a local remedy and a general chemotherapy. It has no direct effect on the germ itself. The results obtained depend on individual resistance.

Knee Sprains

Leriche, speaking before the Academy of Surgeons, stated that knee sprains besides constituting "mechanisms, lesions or clinical aspects" were also often nervous phenomena, an accumulation of vasomotor reactions offering a characteristic clinical picture, without rupture of the ligaments or bone wrenches. Mondor also sought to define knee sprains. Are they simply torsions of the sensitive ends of the ligaments, developing the clinical appearance of edema, inflammation, hydrarthrosis, pain and functional inability or are they anatomic lesions of the ligaments? One does not always find, he said, in the course of primary interventions in knee sprains the classic lacerations of the ligaments. On the other hand, in twenty-eight cases he had observed seven wrenchings away of the spine of the tibia. In a woman aged 32, who had suffered a lesion through the torsion of the coxofemoral joints and who presented the clinical picture of a knee sprain, namely inward swelling, ecchymosis, local inflammation and after that lateral movements, a careful examination of the lesions disclosed a laceration of the patellar extremity and accompanying lesions; in short, a wide transverse injury of from 6 to 7 cm. These lesions were repaired by means of sutures and a reconstitution of the levels, and the limb was placed in a cast. Three years has elapsed, and recovery remains perfect with no functional disorders or joint looseness or osteomas.

This case did not exclude the possibility of concomitant nervous lesions, as Mauclaire pointed out. The good results obtained from cocainizations of knee sprains support Leriche's emphasis on the part nervous lesions play in the entirety of symptoms provoked by the knee sprain. Schwartz thought that hemarthrosis which succeeds traumas immediately and the ecchymosis which accompanies them demonstrate tissue lesion and cannot be solely attributed to ganglionic fluxions.

Surgery of the Sympathetic Nerve

In the meeting of the Académie de chirurgie, January 3, the discussion centered round the innervation of the sympathetic nerve. Luzuy reported two almost identical cases of a seton wound in the forearm made by a bullet in which neither the bones nor the large nerve trunks were injured but which caused a complete insensibility of the arm with contraction of the hand and fist that resisted restoration. He diagnosed the condition as one of vasomotor disturbances and decided to operate on the stellate ganglion. A single penetration of the needle brought on Horner's syndrome, justifying the conclusion that a lesion of the sympathetic nervous system was involved. The infiltration of the ganglion promptly restored the contraction and the ischemic disturbances. Ameline thought that perhaps only a traumatic disturbance of the muscular tonus was implicated, the result of hypertonia, in which the "communicating branches" had been paralyzed and that it itself was under the influence of the stellate infiltration.

Welti and Wentz observed Raynaud's syndrome in a woman or, as they designated it, "circulatory disturbances of an ischemic type with digital eschars recalling Raynaud's disease." The left leg was amputated. When ulcerations developed on the stump, three cocainizations of the lumbar plexus were tried, without success. Finally the thigh had to be removed. An eschar formed on the left hand. The ablation of the left stellate ganglion normalized conditions at this point. When ischemia and trophic disorders appeared in the right hand,

stellectomy was performed on this side with an ample perihumeral sympathicectomy. On the day of the operation all ischemic symptoms disappeared. Welti and Wentz conclude that stellectomy and the enervation of the sympathetic nerve give good results, provided the operation is done on an ample scale. In one of Ameline's cases enervation was insufficient to maintain improvement for more than six months, probably because the enervation had not been sufficiently extensive.

Pierre Dival reported a case in which resection of the sympathetic nerve of the inferior mesenteric and hypogastric plexus was performed on a boy aged 9 presenting a true giant colon. The megacolon healed but left lesions on the wall of the colon. An intestinal occlusion supervened and an artificial anus had to be made on the right colon and afterward a hemicolectomy in the left side. Dival reported the boy in good health but with two colonic fistulas remaining to heal. According to Thierry de Martel, the role of the sympathetic nerve in organic disorders is to alter functional activity. Secondary lesions that result can be corrected, but the improvement may only too often be temporary.

BERLIN

(From Our Regular Correspondent)

Jan. 20, 1940.

Dietary Kitchens in Berlin

The first so-called ambulatory dietary kitchen has been instituted in Berlin; that is, a station where those in need of special diets can secure noonday and evening meals on medical certification. These kitchens are directed by a governmentally recognized dietetic assistant and supervised medically by the Organization for the Nutrition of the Sick. Patients entitled to this service are either employed or for other reasons are not in the position to make their necessary dietary arrangements. All kinds of diet can be prepared. The noonday meal costs 0.7 mark (28 cents) the evening meal 0.6 mark (24 cents). For more expensive diets an additional charge of 0.25 mark (10 cents) may be made. These dietary kitchens, of which two more are in preparation, are organized by an association of German women in conjunction with the public welfare division of the national socialist party.

Curbing Accidents Due to Drunkenness

Himmler, chief of German police and head of the SS (schutzstaffeln) under naziism, recently promulgated the following order: Because of the large number of traffic accidents due to drunkenness, intoxicated persons endangering traffic are to be arrested and kept in custody for as many as twenty-four hours. Automobile drivers are to be deprived of driving licenses for a certain length of time. Drivers of other vehicles and bicycle riders can be deprived of their vehicles for two weeks. If such persons have caused an accident and conducted themselves unworthily or if they are habitual drinkers they may be kept for four weeks under police control. The same penalty applies to tavernkeepers if they serve alcoholic beverages to persons already intoxicated. Habitual drinkers whose vice affects the welfare of their dependents must regularly remit to them a part of their income. A vigorous attitude should be assumed in determining what constitutes alcoholic excess in individual cases.

The police department in Memel has ordered that all persons given to immoderate drinking be held in custody until the beginning of the next workday. Before being released, they are to be photographed. Their photographs together with their names are to be publicly displayed for a week. Taverns selling alcohol to drunken persons may be closed by the police.

Vaccines Against Dysentery

True bacillary dysentery (Shiga-Kruse) is rare in central Europe. In 1938 it was imported by migrating workers into Mecklenburg, in northern Germany, and had a 12 per cent mortality rate. Preventive measures against bacillary dysentery have been inadequate. Recently Prof. R. Otto, director of the Institute for Experimental Therapy at Frankfort on the Main (founded by Ehrlich and then directed by Kolle), reported on the use of his vaccine in Flexner's dysentery. He was able to curb an epidemic affecting 3,500 men at a military training post. Civilians living in the vicinity who were not vaccinated caught the disease and some died of it. Results like these have not been secured in the Shiga-Kruse dysentery. For this reason the statements of Prof. R. Prigge, a member of the same institute, before the Senckenbergische Naturforschende Gesellschaft, are of great interest. Prigge is known especially for his studies of diphtheria vaccines. In 1937 he announced his dysentery vaccine, which consists of a mixture of bacterial exotoxin with greater neural effects and endotoxin with special action on the intestine. The preparation is now in process of manufacture and is to be ready in the spring. In animal experimentation, excellent results were attained. The first clinical observations also are favorable but require extensive confirmation.

Effects of Seasons and Weather on Influenza

According to Prof. J. Wätjen, of the University of Halle, who investigated the effects of seasons and weather on influenza, there were found at necropsy during the months of February, March and April, after the severe influenza epidemic of the winter of 1936-1937, influenza bacilli in the bronchioles of about 33 per cent of the cases. These investigations were continued for another year until April 1938. Of the 1,370 sections 615, or 45 per cent, were examined bacteriologically. In 181, or 20.4 per cent, bacteria were discovered and in 434, or 70.6 per cent, none. The positive bacteriologic reactions fluctuated markedly in the individual months. A sort of spring peak was recorded from April to June 1937 and a winter peak during December 1937 and January 1938. Only during these two peak periods were also cases of localized pneumonia observed that resembled influenzal pneumonia. The spring peak of 1937 could be connected with the preceding winter epidemic; the increase of positive cases within the winter peak might have been due to the environmental factors. The official meteorologic indications were entered daily and monthly on the records, together with the positive and negative bacillary observations. In consequence, accumulations of positive observations were noted whenever the temperature fell to arctic frigidity. The mere invasion, however, of cold and warm air waves clearly was not sufficient to induce a regular occurrence of positive bacilli. Humidity, wind direction, sunshine and cloudiness exercised no effect. The winter peak of cases is regarded as an accumulation of influenza bacilli incidental to the season. This may be due to the tendency to catch cold when the weather is cold and wet. In spite of an increase of influenza bacilli in the bronchioles, contrary to expectations, no serious epidemic of influenza occurred in the winter of 1937-1938. This proves, according to Wätjen, that the presence of influenza bacilli alone is insufficient, even after penetration, to cause an influenza infection; other factors need to be present to produce influenza.

Personal

Prof Max Borst, professor of pathologic anatomy in Munich, celebrated his seventieth birthday Nov. 19, 1939. He was born in Würzburg and as a pupil of the pathologist Eduard von Rindfleisch laid the foundation of his career there. His excellent contributions, especially in the fields of inflammatory diseases and malignant tumors, soon paved the way for a distinguished academic career, which no doubt was aided by a natural eloquence and the ability of vivid presentation. He was called to Cologne in 1905, to Göttingen in the same year

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and to Würzburg in 1906. In 1910 he succeeded von Bollinger in Munich. The new institute promised him at the time was not constructed until much later but is now one of the finest in the world. Borst is the author of a number of books. In 1902 he published the "Atlas of Malignant Tumors" in two volumes, "General Pathology of Malignant Tumors" in 1924 and the chapters on "Pathologic Growth" and "True Tumors" in Aschoff's textbook, which were constantly revised to keep abreast of research. Borst has been president of the state scientific commission for cancer control in Germany. He is not likely to resign during the progress of the war.

Deaths

Prof. Erhard Riecke, formerly professor of dermatology in Göttingen, died in Leipzig at the age of 71 (THE JOURNAL Oct. 14, 1939, p. 1502).

AUSTRALIA

(From Our Regular Correspondent)

Jan. 16, 1940.

The Law Against Abortion

Following the unexplained disappearance of several women during the last two years, the Queensland government continues to tighten the law relating to abortion. The new medical act, gazetted last month, compels practitioners to report immediately both to the police and to the director general of health any case of attempted criminal abortion or any suggestive circumstances. Members of the profession have criticized the act contending that, as it has not attacked the root of the problem, it cannot reduce the primary evil and that, by encouraging a serious breach of confidence between patient and physician, it will serve only to force the existing evil further into obscurity and unskilled hands. Now in an amendment to the health act further wide powers have been given to the police to search for missing women and those suspected of obtaining miscarriage. With or without a warrant from a justice of the peace, police may enter and search any suspected place without even so much as stating the grounds for "reasonable suspicion" and seize as evidence any object that might be used for procuring miscarriage.

Education in Mothercraft

The Mothercraft Association of Queensland in conjunction with the Queensland Nutrition Council has developed an organization whereby a series of lectures and demonstrations in all the wider aspects of mothercraft and homecraft are given annually not only to expectant mothers and young married women but also to girls intending to make homecraft their career. The course is organized in five sections: mothercraft, home nutrition, housecraft, child management and home first aid and home nursing. Each section comprises ten lectures and ten practical demonstrations. The lectures are given by leading medical men and others expert in their particular sphere. The course is excellent and popular. It shows a welcome advance on the teaching of mothercraft as it figures in the syllabus of some secondary schools and evening colleges, merged with many other domestic subjects of doubtful popularity. The Mothercraft Association encourages young girls to take the course, with a view to becoming trained workers in this field, and so able to take over the management of any home at a moment's notice in the event of a mother suddenly being taken ill or wishing to have a holiday away from her family. This idea is being readily accepted in Queensland. Since the outbreak of war, the association has arranged a further series of lectures dealing with a number of subjects related to emergency conditions, including mass feeding, care of large numbers of children in reception areas and substitution food values.

Medical Saga of the Air

For a brief period last week a new headline vied with the war news for the front page of Australian newspapers. A "flying doctor" and his pilot were reported missing somewhere in central Australia. Three days after they had set out from Cloncurry the plane was located, and the doctor and his pilot have now been rescued by a land party. That a flying doctor's plane has been forced down somewhere in uninhabited countryside is nothing new to these men, whose "practices" are lonely spinifex desert and rocky ranges. In eleven years of service, Australia has come to take the saga of the flying doctors somewhat for granted. Today more than 1,000,000 square miles and more than 3,000 people are served by the six medical men whose wings carry them on a 400 mile radius from Port Hedland, Cloncurry, Broken Hill, Kalgoorlie, Wyndham and Alice Springs. Last year, and the Alice Springs station was then barely established, the flying doctors flew nearly 100,000 miles. From the 600 pedal wireless stations scattered through lonely Australian outposts, and the receiving sets at the bases, came 37,554 calls for help for medical advice. Dr. Alberry, flying doctor of the Cloncurry base, who was reported missing last week, has himself circled the earth six times in mileage on his flights to aid outback people.

RISK LIVES FOR PATIENTS

To land where there is no landing ground; to risk his life to reach a patient; to go where no white man has gone before, is nothing new to the doctors of the flying medical service. That is the flying doctor's job. So are all the other hazards that come their way. There have been times when the wing of a plane has formed the roof of their surgery; when, forced down in unknown territory, one or other had had to use all his skill to save his own life and the life of his pilot until help came. It has taken eleven years to complete the structure that an Australian inland mission padre dreamt of in Cloncurry in 1928, and "Flynn of the Island," now moderator general of the Presbyterian church in Australia, has lived to see his dream come true. The cost of maintenance of the six bases alone is more than £25,000 a year. Of this the commonwealth and state governments contribute £9,000. The rest comes from trusts and private donations. Last year the flying doctor service became the Australian Aerial Medical Service. Thanks to the flying doctor and his plane, much of the loneliness, much of the terror has gone from Australia's outback today. They are covering the open spaces of our land with a mantle of medical safety.

Marriages

JOHN EDWARD HOPKINS, Stoney Creek, Ont., Canada, to Miss Celia Teresa Faulhaber, of Clinton, Mich., in February.

ROBLEY CURTIS ALLISON, Petersburg, Va., to Miss Grace Elizabeth Johnson, of Lenoir, N. C., January 20.

WILLIAM MEIER MOODY, Cincinnati, to Miss Patty Alfred, of Covington, Ky., in Lexington, Ky., January 20.

RICHARD RAYMOND SLUCHER, Buechel, Ky., to Miss Mary Emma Hood, of Louisville, in February.

WILLIAM DOTSON WELLS, Paris, Ky., to Miss Susan Ellen Musgrave, of Louisville, January 27.

WALTER E. DANIEL, Charlotte, N. C., to Miss Ada Perry Gibson, of Leesburg, Dec. 30, 1939.

HAROLD GARTNER, Valhalla, N. Y., to Miss Dorothy Mathon, of New York, January 7.

HENRY LEE, Roanoke, Va., to DR. ELIZABETH L. SAUNDERS, of Radford, Dec. 26, 1939.

JOHN R. HILL to Miss Anna Gertrude Griffin, both of Knoxville, Tenn., February 9.

RAY BICKERMAN, Peoria, Ill., to Miss Kathryn Louise Eckert in Chicago, February 3.

Deaths

Martin L. Stevens ● Asheville, N. C.; Baltimore Medical College, 1891; member of the House of Delegates of the American Medical Association in 1907, from 1923 to 1936 and in 1938-1939; past president of the Medical Society of the State of North Carolina and the North Carolina Tuberculosis Association; member of the American Clinical and Climatological Association; fellow of the American College of Physicians; member of the state board of medical examiners from 1914 to 1920; during the World War served as chief of the local medical advisory board; member of the board of directors of the North Carolina Sanatorium and the Western North Carolina Sanatorium; on the staffs of the Ambler Heights Sanatorium, St. Joseph's Hospital and Sunset Heights, Asheville, and Biltmore Hospital and Hillcroft Sanatorium, Biltmore; aged 75; died, January 20, of coronary occlusion.

Raynham Townshend, New Haven, Conn.; Columbia University College of Physicians and Surgeons, New York, 1905; member of the Connecticut State Medical Society; fellow of the American College of Surgeons; at one time assistant in the anatomic laboratory and clinical assistant in surgery, Yale University School of Medicine; served during the World War; attending surgeon to the Hospital of St. Raphael; assistant attending surgeon to the New Haven Hospital; consulting surgeon to the Grace Hospital and New Haven Orphan Asylum; aged 61; died, January 31, of coronary artery disease.

Harry Adolph Davidson ● Louisville, Ky.; Hospital College of Medicine, Louisville, 1899; member of the House of Delegates of the American Medical Association in 1923 and 1926-1927; since 1923 trustee and later secretary of the board of trustees and formerly professor of gynecology and physiology at the University of Louisville School of Medicine; served during the World War; on the staffs of the City Hospital and the Norton Memorial Infirmary; aged 64; died, January 20.

Charles Andrew Ray, Charleston, W. Va.; College of Physicians and Surgeons, Baltimore, 1887; member and past president of the West Virginia State Medical Association and the Kanawha Medical Society; fellow of the American College of Physicians; president of the court of Kanawha County; formerly editor and on the editorial staff of the *West Virginia Medical Journal;* aged 75; medical director of the Kanawha Valley Hospital; died, January 21.

John Henry Bennett ● York, Pa.; University of Maryland School of Medicine, Baltimore, 1892; Jefferson Medical College of Philadelphia, 1893; member of the Radiological Society of North America; at one time city health officer and registrar of vital statistics; formerly member of the board of directors in the city school district; served during the World War; aged 67; on the staff of the West Side Sanitarium, where he died, January 4.

David Walker Basham ● Wichita, Kan.; Kansas City Medical College, 1884; University of the City of New York Medical Department, 1892; member of the Western Surgical Association; fellow of the American College of Surgeons; past president of the Sedgwick County Medical Society; on the staffs of the Wesley Hospital, Sedgwick County Hospital and the St. Francis Hospital; aged 85; died, January 17, of coronary occlusion.

Daniel George Monaghan ● Denver; Denver and Gross College of Medicine, 1903; member of the American Academy of Ophthalmology and Otolaryngology; served during the World War; aged 65; consultant on the staff of the National Jewish Hospital; past president of the staff and later served on the advisory board of St. Joseph's Hospital, where he died, January 17, of atrophic cirrhosis of the liver and arteriosclerosis.

Sambola Jones Couvillon, Moreauville, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1904; member of the Louisiana State Medical Society; parish coroner; for many years member of the parish school board; member of the state board of health; formerly mayor of Moreauville; past president and secretary of the Avoyelles Parish Medical Society; aged 60; died, January 21, in the Touro Infirmary, New Orleans.

John Joseph Cloonan, Stamford, Conn.; College of Physicians and Surgeons, Baltimore, 1897; member of the Connecticut State Medical Society; fellow of the American College of Surgeons; surgeon to Stamford Hospital; consultant to St. Vincent's Hospital, Bridgeport; for many years member of the board of education; at one time bank president; aged 69; died, January 28, of cardiovascular renal disease.

Amos Solon Wheelock ● Goodrich, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1888; past president of the Genesee County Medical Society; fellow of the American College of Surgeons; for many years member of the school board; surgeon to the Goodrich General Hospital; aged 78; died, January 22, when the automobile in which he was driving was struck by a train.

Manuel Diaz-Garcia ● San Juan, P. R.; Temple University School of Medicine, Philadelphia, 1916; fellow of the American College of Surgeons; medical director of the Clinica Diaz Garcia; consulting surgeon to the Hospital Mimiya, Santurce, Capital City Hospitals, San Juan, and the Municipal Hospital, Rio Piedras; aged 45; died, January 26.

Lorenzo Linn Zimmer, Detroit; Detroit College of Medicine, 1903; member of the Michigan State Medical Society; fellow of the American College of Surgeons; consulting gynecologist to the Receiving Hospital and St. Mary's Hospital; aged 60; died, January 22, in the Providence Hospital of appendicitis.

Clyde Allen Lown, Grand Ledge, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1904; member of the Michigan State Medical Society; aged 69; died, January 20, in the Edward W. Sparrow Hospital, Lansing, of intestinal obstruction, hypertension and arteriosclerosis.

L. Leopold Moser, Jamaica, N. Y.; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, 1919; member of the Medical Society of the State of New York; on the staff of the Jamaica Hospital; aged 47; died, Dec. 20, 1939, in the Jamaica Hospital of coronary thrombosis.

Charles Clifton Buchanan, Hattiesburg, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1909; member of the Mississippi State Medical Association; served during the World War; aged 52; died, January 22, in the Methodist Hospital of bronchopneumonia.

Edward A. Mattoon, Sapulpa, Okla.; Jefferson Medical College of Philadelphia, 1875; at one time superintendent of the Denver and Rio Grande Western Railroad Hospital, Salida, Colo., and the Okmulgee (Okla.) City Hospital; aged 91; died, Dec. 24, 1939, of a fracture of the hip.

Charles Nash Dawson, Black Earth, Wis.; Washington University School of Medicine, St. Louis, 1925; member of the State Medical Society of Wisconsin; served during the World War; aged 41; died, Dec. 26, 1939, in Beloit of intestinal hemorrhage and cirrhosis of the liver.

Walter Clark Montgomery, New York; Columbia University College of Physicians and Surgeons, New York, 1900; formerly assistant professor of clinical surgery, Cornell University Medical College; served during the World War; aged 61; died, January 15, of heart disease.

William Shelby Sanders, Troy, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1892; member of the Medical Association of the State of Alabama; formerly physician to the Troy State Teachers College; aged 71; died, January 13, of coronary thrombosis.

Frederick Cook, Seattle; Northwestern University Medical School, Chicago, 1903; member of the Washington State Medical Association; aged 61; died, January 2, in the Western State Hospital, Fort Steilacoom, Wash., of bilateral bronchopneumonia and diabetes mellitus.

Thomas O. Kirkpatrick, Lowndesville, S. C.; Tennessee Medical College, Knoxville, 1899; member of the South Carolina Medical Association; past president of the Abbeville County Medical Society; aged 71; died, January 19, of multiple sclerosis and bronchopneumonia.

General Sherman Wilson, Fortuna, Mo.; Barnes Medical College, St. Louis, 1899 and 1901; member of the Missouri State Medical Association; past president and secretary of the Moniteau County Medical Society; aged 64; died, January 7, of coronary thrombosis.

James Clarence Sartor, Rayville, La.; University of Louisville (Ky.) Medical Department, 1909; member of the Louisiana State Medical Society; member of the state board of health; served during the World War; aged 57; died, January 4, of coronary occlusion.

Ernest H. Bohland ● St. Paul; Medical Department of Hamline University, Minneapolis, 1903; on the staffs of St. Luke's Hospital, St. Joseph's Hospital, Charles T. Miller Hospital and Children's Hospital; aged 65; died, January 10, of acute endocarditis.

Roy Calvin Kitchell ● Sullivan, Mo.; Chicago Medical School, 1922; served during the World War; aged 48; died, January 4, in the Veterans Administration Facility, Jefferson Barracks, of peritonitis following an operation for appendicitis.

Horace Plummer Wilson ● Whittier, Calif.; Northwestern University Medical School, Chicago, 1896; fellow of the American College of Surgeons; served during the World War; aged 68; died in December 1939 of coronary heart disease.

Henry J. Off, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1896; since 1939 emeritus professor of otology at the Temple University School of Medicine; aged 65; died, January 28, of coronary infarct.

William Brewer ● Woodbury, N. J.; Jefferson Medical College of Philadelphia, 1896; past president of the Gloucester County Medical Society; owner of a hospital bearing his name; aged 74; died, January 28, of carcinoma of the liver.

Cary Stewart Wilson, Soso, Miss.; Memphis (Tenn.) Hospital Medical College, 1909; member of the Mississippi State Medical Association; aged 54; died, January 3, in a hospital at Laurel of hemorrhage due to gastric ulcer.

Olaf F. Carlson, Fort Worth, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1897; aged 74; died, January 23, in the Cook Memorial Hospital of cerebral thrombosis and lobar pneumonia.

Samuel Richard Volpe, New York; Cornell University Medical College, New York, 1936; resident physician to the Bellevue Hospital; aged 28; was found dead, January 23, of hanging and self-incised wounds of the wrists.

C. V. Arthur Weichelt, Barrington, Ill.; Jenner Medical College, Chicago, 1900; served during the World War; aged 70; died, January 4, in the Veterans Administration Facility, North Chicago, of cerebral arteriosclerosis.

Philip Doddridge Lipscomb ● Richmond, Va.; University of Virginia Department of Medicine, Charlottesville, 1900; aged 69; died, January 4, of injuries received when he was struck by an automobile while crossing the street.

James Oscar Wickerham, Rockford, Ohio; Starling Medical College, Columbus, 1897; served during the World War; aged 75; died, January 14, in a hospital at Van Wert of a fracture of the hip received in a fall.

James G. MacGregor, Boyne City, Mich.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1895; member of the Michigan State Medical Society; aged 77; died, January 16, of cerebral hemorrhage.

Frederick Henry Brown ● Billings, Mo.; Barnes Medical College, St. Louis, 1899; served during the World War; aged 63; died, January 4, in the Springfield (Mo.) Baptist Hospital of carcinoma of the stomach.

Henry Clermont Miller, Bradenton, Fla.; Hahnemann Medical College and Hospital, Chicago, 1898; served during the World War; aged 69; died, January 9, of arteriosclerosis and hypertrophy of the prostate.

Albert William Nelson ● Battle Creek, Mich.; American Medical Missionary College, Chicago, 1903; fellow of the American College of Physicians; aged 61; died, January 5, of cerebral hemorrhage.

Thomas C. W. Ellis, Amite, La., Tulane University of Louisiana School of Medicine, New Orleans, 1891; at one time health officer of Tangipahoa Parish; aged 71; died, January 20, of angina pectoris.

Chester James Teass ● San Luis Obispo, Calif.; Cooper Medical College, San Francisco, 1897; fellow of the American College of Surgeons; aged 65; died, Dec. 23, 1939, of carcinoma of the esophagus.

James Erwan Hardaway, Lynn, Ark. (licensed in Arkansas in 1903); member of the Arkansas Medical Society; aged 67; died, January 4, in a hospital at Batesville of myocarditis and chronic nephritis.

Lawrence Anthony Zinsmeister, Sproul, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1903; aged 60; died, January 12, in the Memorial Hospital, Cumberland, Md., of heart disease.

James Harrison Rachels, Danville, Ill.; Meharry Medical College, Nashville, Tenn., 1908; aged 60; died, January 16, in St. Elizabeth Hospital of a ruptured esophagus resulting from hiccoughs.

Peter Arthur Schulberg, Durand, Wis.; University of Illinois College of Medicine, Chicago, 1914; aged 49; died, Dec. 29, 1939, in Butte, Mont., of chronic nephritis and cerebral hemorrhage.

Charles Brentano Wagner, Chicago; Chicago Medical College, 1888; on the staff of the Evangelical Deaconess Hospital; aged 74; died, January 18, in the Illinois Masonic Hospital of pneumonia.

Judge B. Pittman, Crenshaw, Miss.; Louisville (Ky.) Medical College, 1889; aged 72; died, January 21, in the Methodist Hospital, Memphis, Tenn., of coronary sclerosis and hemiplegia.

Augustus S. Warner ● Chicago; Northwestern University Medical School, Chicago, 1895; aged 71; died, January 18, in the West Suburban Hospital, Oak Park, Ill., of coronary thrombosis.

J. Lyman Hutchinson, Tacoma, Wash.; University of Buffalo School of Medicine, 1901; member of the Washington State Medical Association; aged 62; died, January 6, of coronary occlusion.

Theodore W. Singer, Louisville, Ky.; Cleveland Medical College, 1853; veteran of the Civil and Spanish-American wars; at one time deputy coroner; aged 104; died, January 3, of pneumonia.

John Milton Ryall Jr., Braddock, Pa.; Temple University School of Medicine, Philadelphia, 1937; aged 30; resident physician to the Braddock General Hospital; died, Dec. 14, 1939.

Isaac Lee Dowdey, Boaz, Ala.; Chattanooga Medical College, 1903; served during the World War; aged 66; died, January 24, in a hospital at Gadsden of cerebral hemorrhage.

Thomas R. Loer, Seattle; College of Physicians and Surgeons, Keokuk, Iowa, 1896; member of the Washington State Medical Association; aged 70; died, January 4, of pneumonia.

Charles Augustus Dodson, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1911; aged 65; died, January 8, of cerebral hemorrhage and hypertension.

Nathaniel L. Drunert, Truxton, Mo.; St. Louis College of Physicians and Surgeons, 1889; aged 77; was found dead, January 1, of diabetes mellitus and coronary artery disease.

Stonewall W. Johnson, Sullivan, Ill.; Homeopathic Medical College of Missouri, St. Louis, 1887; formerly mayor and health officer; aged 76; died, January 19, of chronic nephritis.

Frank Cook, Springfield Lake, Ohio; Ohio State University College of Medicine, Columbus, 1931; aged 32; died, January 22, in the Edwin Shaw Sanatorium, Akron, of tuberculosis.

George Smith Williams, Syracuse, N. Y.; University of the City of New York Medical Department, 1890; aged 82; died, Dec. 5, 1939, of cerebral hemorrhage and arteriosclerosis.

Edward Kilbourne Roberts, Los Angeles; Yale University School of Medicine, New Haven, Conn., 1880; aged 82; died, January 15, in Simsbury, Conn., of chronic myocarditis.

Joseph Vincent Burns, Coaldale, Pa.; Jefferson Medical College of Philadelphia, 1915; served during the World War; aged 51; died, Dec. 31, 1939, of coronary thrombosis.

James W. De Jarnatt, Quitman, Ark.; University of Arkansas School of Medicine, Little Rock, Ark., 1905; aged 68; died, January 23, at Conway of cerebral hemorrhage.

George Francis Van Pelt ● Gordon, Ohio; Medical College of Ohio, Cincinnati, 1898; aged 70; died, January 24, in the Good Samaritan Hospital, Dayton, of pneumonia.

Grant Meyer, Marion, Kan.; Central Medical College of St. Joseph, Mo., 1896; member of the Kansas Medical Society; aged 71; died, Dec. 22, 1939, of cerebral hemorrhage.

William Hammond Ashby, Lewisport, Ky.; Hospital College of Medicine, Louisville, 1904; aged 62; was found dead, January 24, of a self-inflicted bullet wound.

Richard Douglas Keller, Greeneville, Tenn.; University of Tennessee Medical Department, Nashville, 1894; aged 71; died, January 3, of cerebral hemorrhage.

William Utteridge Cole, Columbus, Ohio; Starling Medical College, Columbus, 1890; aged 78; died, January 18, in the Grant Hospital of cardiorenal vascular disease.

Edwin Jacob Knerr, Wyoming, R. I.; Starling Medical College, Columbus, 1895; formerly senator; aged 69; died, January 15, of carcinoma of the rectum.

Claudius A. Gavin, New Port Richey, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1911; aged 55; died, January 6, of pulmonary tuberculosis.

William Andrew Gowing, Toledo, Ohio; Toledo Medical College, 1898; served during the World War; aged 68; died, January 17, of coronary thrombosis.

Clarence N. Ferguson, Chapel Hill, Tenn.; University of Tennessee Medical Department, Nashville, 1891; aged 71; died, January 13, of cerebral hemorrhage.

William Bowers Watts, Atlanta, Ga.; University of Georgia Medical Department, Augusta, 1889; aged 74; died, January 20, of cerebral hemorrhage.

Bureau of Investigation

POST OFFICE BANS A "PILE CURE"

"Pilocura," Alleged Brazilian Discovery, Is Declared a Fraud

A nostrum business operating from Washington, D. C., under the trade style "Pilocura Company, Inc.," has been declared fraudulent by the Post Office Department and debarred from the mails. Its principal promoters were a Paul W. DeLoe and his wife, Jane B. DeLoe.

These persons appeared at a hearing of the case which consumed an entire day. At the conclusion the DeLoes' counsel obtained permission to submit a brief, to which Hon. Vincent M. Miles, Solicitor for the Post Office Department, gave due consideration before recommending to the United States Postmaster that a fraud order be issued against the concern. Some of the information brought out by Judge Miles in his memorandum follows:

The business was started in 1912 by Mrs. DeLoe and incorporated in Delaware in 1932. At the time of the Post Office investigation Paul DeLoe was president and his wife Jane was secretary and treasurer. From 1932 on no newspaper advertising had been done, but since March 1938 circulars had been mailed to about 2,500 persons, whose names were purchased from a Chicago letter broker and a concern called M. Royds Company, of Kansas City, Mo. In this connection it is interesting to note that in October 1938 the M. Royds Company and its alias, Hugo Remedy Company, were debarred from the mails for conducting a fraudulent "pile cure" scheme and a "kidney and bladder cure." It is easy to believe that their "sucker lists" would be useful to the Pilocura concern.

The memorandum further brought out that not only were the DeLoes without medical training but also that no physicians, chemists or pharmacists were connected with the business. The treatment originally was sold over drug store counters as a liquid under the names "Safe Vegetable Compound" or "SVC." Jane DeLoe was said to have claimed that the product had come to her attention in 1902 or 1903 when she was visiting in Norfolk, Va. There, she said, her colored maid took something that a friend recommended for "piles" and in three days they were gone. So impressed was Mrs. DeLoe, she said, that she made another trip to Norfolk, where she learned that the preparation was sold by "a little German doctor" who told her he had bought it twenty-five years previously on a trip to Brazil. He claimed, she said, that its efficacy depended on a certain herb unknown in this country. Mrs. DeLoe related that she prevailed on him to sell her the formula for $250 on the promise that she would not make it public during his lifetime.

Mrs. DeLoe described the "cure" as originally obtained by her maid as a bad-tasting, evil-smelling, sticky brown liquid, composed of seven ingredients and 25 per cent of alcohol. The mixture was known as "South American Herb Remedy." Mrs. DeLoe testified that after selling it in this form for a time through drug stores she had it analyzed by a "Dr. Kalusowski" (no such name appears in the American Medical Directory) and asked him to revise the formula so as to make it "really effective." On his advice she eliminated the alcohol and three of the ingredients, whose names she had forgotten, reduced the remaining constituents to tablet form and changed the name to "Pilocura." She added that she had not intended this title to mean "pile cure" but merely that it "struck her as a nice little name."

Advertising circulars introduced at the hearing contained not only the company's claims but a number of testimonials, to most of which only initials were signed. One inquirer received from the company a typewritten letter reading in part:

> "During the past several years we have come up against a great number of desperate cases of piles, as the enclosed circular will indicate. If you will give PILOCURA a fair trial we believe you will be satisfied that an operation will be unnecessary. We are enclosing a letter which may also be of interest to you."

The Solicitor's memorandum reported that examination of the Pilocura tablets, prepared by Burroughs Bros. Mfg. Co., Baltimore, showed that each consisted essentially of large amounts of licorice and rhubarb, as well as some yerba santa and buckthorn (frangula). It was surmised that the yerba santa represented the "little known" Brazilian herb which the promoters of Pilocura played up as one of the ingredients. The DeLoes' only medical witness, named as a Dr. Howard Hume, testified that the yerba santa "is supposed to be an alterative and build up the general health" and "seems to be the most important thing" in the preparation. However, his testimony as to its effect on the human system placed it in the same class with the three other ingredients as a "mild laxative" and he was unable to explain how it allegedly affected the general health. The government's two medical experts testified that yerba santa was used principally as a flavoring ingredient in certain preparations and, except for such slight laxative effect as it might produce in connection with the other ingredients, it was therapeutically worthless as used in Pilocura.

The government's medical evidence showed further that the basic causes of hemorrhoids are many and varied and that frequently the conditions and their accompanying pains disappear without resort to medication. Also this evidence brought out that the only treatment that will replace or restore to normal the tissues in the rectal veins that have been damaged by chronic, recurrent hemorrhoidal attacks is either surgery or injection of sclerosing materials in and about the walls of the veins. Further expert testimony was presented to show that such treatments as Pilocura may irritate and aggravate the hemorrhoidal tissue instead of healing it.

In October 1938 it was reported that a "Dr. Jane B. Coates" was connected with the Pilocura Company in Washington. No record of her could be found in the American Medical Association's files, but in the Washington telephone book ("Summer-Fall 1937") there was listed a "Rev." Jane B. Coates. In the current issue of that directory ("Summer-Fall 1939") "Rev." Jane B. Coates is shown at "1810 Ont. Pl. N.W.," which is the same address (and has the same telephone number) as is given for "Rev." Paul W. DeLoe, one of the Pilocura promoters. The Pilocura Company is not listed. One cannot help wondering whether "Dr." or "Rev." Jane B. Coates and Mrs. Jane B. DeLoe are not one and the same person.

All in all, the Solicitor found from the evidence presented that the Pilocura business was "a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises" and on his recommendation a fraud order debarring it from the mails was issued on March 24, 1939, against the concern under its several "Pilocura" designations and against the officers and agents as such.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Elso Cold Treatment.—Erie Laboratories, Cleveland. Composition: Approximately 2.8 grains of phenacetin and 0.7 grain of acetanilid per capsule. Misbranded because these drugs were declared in false amounts on bottle label and not declared at all on the carton as to presence and quantity.—[*N. J. 30229; June 1939.*]

Formes.—Erie Laboratories, Cleveland. Composition: Essentially a mixture of magnesium hydroxide and carbonate, sodium and potassium carbonates and/or bicarbonates, a water-soluble red substance, peppermint oil and water. For acidosis, dyspepsia, functional stomach disorders, headaches, sleeplessness, nervousness, dizziness, etc. Fraudulent therapeutic claims.—[*N. J. 30229; June 1939.*]

Mrs. Bee Health Asodyne Capsules.—Erie Laboratories and Mrs. Bee Health Laboratories, Cleveland. Composition: Essentially phenacetin, aspirin and caffeine. For painful menstruation. Fraudulent therapeutic claims.—[*N. J. 30229; June 1939.*]

Mrs. Bee Hypo-Tonic Pills.—Erie Laboratories and Mrs. Bee Laboratories, Cleveland. Composition: Chiefly plant material, coated with sugar and iron oxide. Fraudulently represented as a system tonic and nerve sedative for rundown, irritable women.—[*N. J. 30229; June 1939.*]

Prescription 333.—Erie Laboratories, Cleveland. Composition: Essentially aspirin and sodium salicylate. Fraudulently represented as a prompt relief of pain caused by lumbago, neuralgia, gout, arthritis, sciatica, neuritis and swollen joints.—[*N. J. 30229; June 1939.*]

Correspondence

TREATMENT OF BITES OF RABID ANIMALS

To the Editor:—Permit me to refer again to the question of treatment of bites by rabid animals, which was covered under Queries and Minor Notes on page 1434 of The Journal, Oct. 7, 1939.

Since the Pasteur treatment is not 100 per cent effective, by reason of its inability to protect against more than one to three minimal infective doses or to develop the requisite degree of immunity in cases in which the incubation period is short, any other form of treatment which holds out any hope at all of exerting a preventive influence must be applied. The only other treatment at present available is the cautery, either actual, as in the days of Pasteur, or by nitric acid, as at present. The rationality of this procedure can be readily appreciated by a consideration of certain facts concerning virus invasions, particularly the invasion of rabies. Any one who has ever tried to stop a smallpox vaccination take by scrubbing with soap and water or even iodine will appreciate the need of a destructive agent—destructive alike to the tissues and to the still superficial virus. That the virus of rabies remains for a reasonable time in the wound and is not carried away rapidly by the lymphatics is an indisputable fact. The observations of McMaster and Hudack, referred to in the editor's answer to the correspondence and which reveal the speed with which particulate matter is carried away by the lymphatics, are not applicable to rabies. Any rabies virus which may be taken up by the lymphatics is for that very reason rendered *hors de combat*, since the evidence is that rabies virus so introduced is not effective. Rabies cannot be produced experimentally by introducing large quantities into milk, fed to susceptible animals. The disease is never produced by consuming the milk of rabid animals, although the virus, it is said, has been demonstrated in milk. I have inoculated a thousand minimal infective doses of fixed virus subcutaneously in rabbits without producing infection.

The port of entry of the rabies virus in nature is not the lymphatics or the blood stream but the nerves. It is by way of the nerve trunk that the virus travels from the smaller branches in the superficial tissues to the cord and brain. The rate of travel is slow, which accounts for the long incubation period of the disease. The reason for shorter incubation periods when the inoculation is near the brain is thus made clear. While it is true that experimental infection can be produced by intravenous inoculation, the doses are enormous relative to the natural method by an animal's bite, and the results of such inoculations are uncertain and irregular. There is no evidence that natural infection ever occurs by way of the blood stream. Animals survive experimental nerve inoculations when the nerve trunk central to the site of an inoculation is resected, while the resected nerves themselves are infective. It has also been shown that the portion of the spinal cord in connection with an infected nerve becomes infective before the rest of the central nervous system (Marie et al., 1927). Even the infectious quality of saliva is not due to any involvement of the salivary gland tissue but to the presence of neurons, which may occur as single cells or as ganglionic aggregations and which are seated just under the epithelium, the virus being set free from the neurons by abrasion of the epithelium (Topley and Wilson). The virus may spread centrifugally from the brain and be found in such nerves as the brachial and the sciatic (Nicolau and Galloway, 1928).

Not only does fuming nitric acid destroy both tissues and virus on the surface with which it comes in contact but the effect penetrates for a limited but appreciable depth. The contention that one cannot reach absolutely all corners which harbor virus and that for this reason cauterization is useless is without merit. The importance of dosage in relation to the chance of successful infection in all diseases is well known. The principle is of manifold importance in rabies, in which the vaccination treatment is capable of generating a resistance against only a limited amount of virus. It is therefore most essential that the specific treatment be aided by a reduction of the force it has to combat, and this aid is effectively given by thorough cauterization of the wound. Cauterized wounds heal readily, and considerations of scarring have no weight whatever. Indeed, a bite on the face, in which case cauterization is most likely to be withheld because of the fear of scarring, is precisely the one, above all others, which requires thorough treatment, for reasons previously referred to.

As between prompt and thorough cauterization and the Pasteur treatment, there is a question as to which used alone would be the more effective. In my opinion, if all the facts were known it would be found that cauterization is the more valuable. The various estimates of the percentage of successes of the vaccine treatment are subject to considerable modification, because of the many unknown factors which tend to swell the number of cases that should not be included in the series. These include such things as the amount of virus introduced (only one out of six persons develops rabies without treatment), injury of nerves, bites through clothing and the question of rabies in the dog. Everything considered, the omission of cauterization by a physician who knows these facts is a dubious performance.

W. H. Kellogg, M.D., Berkeley, Calif.
Chief, Division of Laboratories, State of California Department of Public Health.

TOXIC HEPATITIS AFTER CINCHOPHEN

To the Editor:—In the article "Toxic Hepatitis and Acute Yellow Atrophy Following Medication with a Cinchophen-Containing 'Cold Cure'" by Cyril M. MacBryde, which appeared in The Journal on January 27, the author states in his summary (p. 318) that he "was unable to find any previous reports of ulcers caused by cinchophen in the human being, although peptic ulcers have been so produced in experimental animals." Evidently our papers (Gastric Ulcers Associated with Cinchophen Poisoning: Report of an Instance with Consideration of the Possible Etiologic Relationship, *Am. J. Digest. Dis. & Nutrition* **1**:29 [March] 1934; Cinchophen Poisoning: A Report of Seven Cases with Special Reference to a Rare Instance Complicated by Multiple Gastric Ulcers, *ibid.* **1**:434 [Sept.] 1934) escaped the author's attention. Based on the original experimental work of Van Wagoner and Churchill (*Proc. Soc. Exper. Biol. & Med.* **28**:581 [March] 1931; *Arch. Path.* **14**:860 [Dec.] 1932), we suggested and discussed the probable relationship between cinchophen poisoning and the finding of gastric ulcers in a patient who had been under our observation. A careful search of the literature at that time revealed one other similar case reported by Reah (Cinchophen Poisoning, *Lancet* **2**:504 [Sept. 3] 1932), but the possible relationship of peptic ulcers to cinchophen intoxication had received no consideration. Hence an abstract of Reah's case was included in our paper. In our summary we "suggested that a careful anamnesis in all peptic ulcer patients from the standpoint of cinchophen therapy might yield interesting data."

Leon Bloch, M.D.
David H. Rosenberg, M.D.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

DERMATITIS FROM SALT WATER BATHING

To the Editor:—In a camp situated on the Florida Keys I have observed that after a group of men have been here for from four to eight weeks, 30 per cent develop a papulopustular dermatitis, which is localized mainly in the axilla, usually bilaterally and concomitant. There are no other signs or symptoms nor elevation of temperature. In this region it is commonly known as "salt water itch" and believed to be the result of constantly bathing with salt water and being exposed to the salt vapor laden air. Therapeutic attempts with calamine lotion, salicylic alcohol, ammoniated mercury and the like have been moderately successful in drying up the lesions. There have been but few cases of secondary infection. The problem is more one of prevention than of treatment, for in a camp of this kind a situation of this nature is detrimental to the morale of the men. Could you advise or refer me to the proper prevention of this dermatitis other than attempting to go over to fresh water bathing, which is unfortunately an unpractical solution in this locality?

Henry B. Dubios, M.D., Ramrod Key, Fla.

ANSWER.—Salt water alone does not commonly produce any irritation or infection. It is possible that some tropical plant or minute animal may cause such a dermatitis, with a low grade secondary infection. The best answer, of course, would be fresh water and soap, but it is realized that this is not practical on a Florida key. The use of a 75 per cent alcohol in saturated boric acid solution is suggested for routine use after bathing. It is possible that Burow's solution (aluminum acetate) in a dilution of 1:20 or 1:10 might also prove of help. Whether the protection obtained by having each individual go over his body with an oily solution, either olive oil, coconut oil or petrolatum, would be of benefit is a question. Perhaps the addition of boric acid to the protective solution or the use of boric ointment, applied previous to bathing, might also be helpful. Of course this is messy and may not appeal to the individuals concerned.

HERPES ZOSTER OF TRIGEMINAL NERVE

To the Editor:—About four years ago a patient, now 30 years of age, complained of pain in the right supra-orbital division of the fifth nerve which became increasingly severe, with a dull constant burning, varying only in intensity. The pain was present in the right frontal area of the scalp, with one area on the right parietal-temporal region of the scalp, at which point there was a cutaneous lesion, diagnosed by a competent dermatologist as herpes. This lesion was excised, and the pathologic report indicated a chronic inflammatory process. There are herpetiform lesions on the right frontal area of the scalp also, which have appeared from time to time since the onset of pain. No sedatives give relief, not even morphine sulfate 1 grain (0.06 Gm.) when the pain is severe. Trichloroethylene and chloroform do not help. Roentgenograms have been taken of the teeth, revealing no impacted molars and clear sinuses. Roentgenograms of the skull are normal, sella sublimation appearing in the right choroid plexus only. The encephalogram and results of spinal fluid examination, including reactions to the Wassermann and the pressure test, were normal. No drugs or combination of drugs completely remove the pain, which at present is more bearable than formerly. I have discussed this case with a neurosurgeon, who says that avulsion of the right supra-orbital nerve will completely rid the patient of this pain. How serious is avulsion of the supra-orbital nerve? The patient was told that it could be done with local anesthesia, yet he was advised to enter the hospital the night before the operation. This frightened him greatly, as it indicates a serious operation to his mind. He was under the impression that he could walk in the same morning, go to the operating room, undergo the necessary surgical procedure and be at home in two or three days. Kindly advise me whether in your opinion avulsion of the supra-orbital nerve will rid the patient of his pain. How serious is this procedure? Is there any other treatment that can be advised in this case? The pain completely incapacitates the patient. What are the after-effects of avulsion of the supra-orbital nerve?

M.D., New York.

ANSWER.—The condition described is doubtless herpes zoster of the trigeminal nerve, manifest peripherally in the area of supply of the ophthalmic division of that nerve. The cause of such herpes is probably the same as that of herpes zoster in the spinal nerves; that is, a low grade, chronic, usually non-destructive inflammation on an unknown basis. Histologically the changes in the gasserian ganglion have been shown to be the same as those in the dorsal spinal ganglions, to which the gasserian ganglion is anatomically analogous. A causative virus has been postulated but never isolated. Such an affliction must always be carefully differentiated from major trigeminal neuralgia, and when the herpes is in the ophthalmic division, as here, there is always the danger of vesicle formation with resultant scars in the cornea.

Avulsion of the supra-orbital nerve is a minor operation and may be accomplished easily under simple procaine hydrochloride anesthesia with a minimum of preoperative and postoperative hospitalization. A small incision through the eyebrow is the site of choice for the operation.

In this case avulsion of the supra-orbital nerve would probably give relief if the pain and herpes are entirely within the area of supply of that nerve. Such an operation is worth trying. But it must be remembered that the pain of herpes trigeminalis may be centered in the pons, so that even section of the posterior root will give no relief.

High voltage roentgen treatment of the gasserian ganglion has been suggested but is not noteworthy for its results, and avulsion of the nerve is the usual procedure.

After avulsion of the nerve, the area of supply will be anesthetic to light pain, light touch, heat and cold stimuli. After a few months, when the nerve has again grown out, sensation will be reestablished and the pain may or may not recur.

PAPAVERINE IN ASTHMA, ANGINA AND COLDS

To the Editor:—I should like to know whether papaverine is of any special value or of greater value than the usual drugs used in bronchial asthma, angina pectoris and head colds (in combination with codeine or, for instance, copavin-Lilly). Can papaverine be procured in one-half grain tablet form?

M.D., Iowa.

ANSWER.—Papaverine exerts a peripheral depressant action on the contractions and tonus of all kinds of smooth muscle. Its peripheral effect includes lowering of intestinal tonus, lowering of high blood pressure by vasodilatation and increase in coronary circulation. Primarily because of its effectiveness in spastic conditions of the gastrointestinal tract and other hypertonic conditions (biliary colic, bronchial spasm and in the diagnosis of pylorospasm), papaverine is included in New and Nonofficial Remedies. With less reason it has been tried in hypertension, angina pectoris, vomiting, gastric crises, asthma and whooping cough. Most authorities do not include papaverine as a remedy for the latter.

The successful use of the opiates in the treatment of common colds has been reported by H. S. Diehl (Medicinal Treatment of the Common Cold, THE JOURNAL, Dec. 23, 1933, p. 2042). Copavin is the proprietary name under which Eli Lilly & Co. markets under license of the University of Minnesota a mixture of codeine sulfate and papaverine hydrochloride one-fourth grain (0.016 Gm.) each. Since both of these ingredients are official in the U. S. Pharmacopeia XI and National Formulary VI, the Council on Pharmacy and Chemistry has failed to see the justification for a proprietary name or patent to control their combination, as the use of opium (Dover's powder) in the treatment of colds is not new.

Papaverine hydrochloride alone can be procured in tablets of any dosage when prescribed by a physician possessing a narcotic license. The average dose is stated as 1 grain (N. F. VI). Papaverine or codeine alone is relatively nontoxic in therapeutic doses, but together the presence of the former may potentiate the action of codeine (Possible Symptoms from Copavin, Queries and Minor Notes, THE JOURNAL, April 16, 1938, p. 1304).

EOSINOPHILIA AND SULFAPYRIDINE

To the Editor:—Two patients treated with sulfapyridine experienced an eosinophilia of from 8 to 10 per cent shortly afterward. They did not have this eosinophilia before sulfapyridine was started. Can the use of sulfapyridine explain the eosinophilia? Doses were about 100 grains (6.5 Gm.) a day.

Raymond H. Goodale, M.D., Worcester, Mass.

ANSWER.—There are no controlled published observations indicating that sulfapyridine may cause an eosinophilia in human beings. P. O. Hageman (*Proc. Soc. Exper. Biol. & Med.* **37**:119 [Oct.] 1937) has noted that in mice which received azosulfamide (neoprontosil) over a period of two weeks, large numbers of eosinophil leukocytes were found in the bone marrow at necropsy. Kreutzmann and Carr (*ibid.* **38**:19 [Feb.] 1938) noted that moderate doses of azosulfamide given to rabbits for a period of three weeks produce an increase in the stipple cells and eosinophil leukocytes in these experimental animals. Hence it is possible in the two cases in which an eosinophilia was noted in the course of the use of sulfapyridine that this change in the leukocytes was due to the administration of the drug.

ALLERGY TO VEGETABLE OILS

To the Editor:—One of my patients has proved hypersensitive to sesame oil, peanut oil, olive oil and most of the vegetable oils. Will you kindly advise what vehicle could be used to dilute the sesame oil, for instance, in order to desensitize this patient against it?

M.D., Texas.

ANSWER.—The query is rather indefinite, as it does not state how the oils were administered. These oils are, of course, used both by mouth or as a vehicle for administering medication intramuscularly. It is difficult to desensitize against an oil, although some work along this line has been done with the oil fraction of poison ivy, ragweed and burweed marsh elder.

In these cases dilute injections have been given with increasing doses for the purpose of raising the resistance of the patient. The results of such treatment are in dispute, with both favorable and unfavorable reports in the literature.

A more logical method would be to substitute some other edible oil for the one to which the patient is sensitive. In a paper entitled "Animal and Vegetable Fats and Oils," U. S. Dept. of Commerce Bureau of the Census, 1937, the following edible oils are listed, any one of which can be taken as a substitute for the one the patient cannot tolerate:

Cottonseed oil	Peanut oil	Coconut oil
Corn oil	Soybean oil	Olive, edible
Palm-kernel oil	Rapeseed oil	Palm oil
Sesame oil	Sunflower oil	Babassu oil
Oleo oil	Fish oils	Tallow, edible

There is also some question as to whether any one is really sensitive to any pure oil which is free from protein. Patients who are sensitive to materials which contain both an oil and a protein are sensitive to the protein fraction and not to the oily part; therefore if the oil is entirely free from protein it should give no symptoms whatever. In support of this is the paper read by Harry S. Bernton, M.D., Joseph R. Spies, Ph.D., and Henry Stevens, Ph.D., on the "Significance of Cottonseed Sensitiveness" before the American Association for the Study of Allergy in June 1939. They have definitely shown that patients are sensitive to cottonseed protein and not at all to cottonseed oil U. S. P. Contact dermatitis, however, may be due to the oily fraction of plants and other substances. The protein fractions may be responsible for bronchial asthma, allergic rhinitis, atopic dermatitis, migraine and other typical allergic conditions.

TRAUMA AND RETRODISPLACEMENT OF UTERUS

To the Editor:—A woman aged 25 was riding on July 31, 1938, in the rear seat of an automobile which was struck by another car from the rear. On the following day she complained of some headache, stiffness of her neck, and backache. There were also various minor bruises about both knees. Examination at that time showed some typical sprains of the muscles of the neck and of the trunk. The uterus, however, was displaced posteriorly but seemed to be normal in size, shape and consistency. The other adnexa appeared to be normal. There were bruises over both knees. The patient continued to complain of backache and in August 1939 the vaginal examination was approximately the same, that is a third degree retroversion which could not be corrected by palliative means. Could the accident have caused this retroversion? There is also a question as to whether or not a patient with a retroversion can become pregnant and if there is any scientific basis for a suggestion that spontaneous miscarriage would take place if she did become pregnant. It has been my experience that external trauma such as the one mentioned has no bearing whatever on the position of the female generative organs. Any information which you can give me with regard to this type of case will be appreciated.

M.D., Illinois.

ANSWER.—The question of retrodisplacement of the uterus following trauma is complicated and controversial. Spicer states that "traumatic displacements (of the uterus) may result from a fall, sudden jarring of the body, such as landing on the feet or buttocks, lifting heavy bodies, and blows over the lower abdomen." Adair says "It is also possible for a blow upon the back, or a fall upon the buttocks, to cause an acute retrodisplacement of a nonpregnant uterus, or of a pregnant uterus early in gestation. . . . It is also possible that a preexisting displacement may be aggravated by traumatic causes. . . ." Kessler states that there are two schools of thought concerning the relation between injury and uterine displacement. One flatly denies the relation and the other favors traumatic etiology in selected cases. Many authorities have apparently seen enough instances of retrodisplacement of the uterus following a severe fall to lead to the conclusion that forceful impact, such as falling on the back, may produce a bad retrodisplacement. For every such instance, however, there are many in which the patient gives a history of falling and has a retrodisplacement which is not ascribable to the injury. In almost all instances the exact relation seems difficult to prove.

Failure to conceive is rarely due to retroversion of the uterus alone. Authorities are not wholly in accord concerning the tendencies to spontaneous miscarriage in patients with retrodisplacement, but the consensus is that retrodisplacement of the uterus is a factor of some importance in the etiology of spontaneous abortion. The following references should be consulted:

Spicer, F. W.: Trauma and Internal Disease, Philadelphia, J. B. Lippincott Company, 1939, chapter 17, p. 426.

Adair, F. L.: Trauma and Disease, edited by Leopold Brahdy and Samuel Kahn, Philadelphia, Lea & Febiger, 1937, chapter VII, pp. 224-225.

Fraser, A. J.: Trauma, Disease, Compensation: A Handbook of Their Medico-Legal Relations, Philadelphia, F. A. Davis Company, 1936, chapter IV, pp. 207-208.

Kessler, H. H.: Accidental Injuries: The Medico-Legal Aspects of Workmen's Compensation and Public Liability, Philadelphia, Lea & Febiger, 1931, chapter XIV, pp. 429-431.

Rapp, J. M.: Traumatic Displacements of the Uterus, *Virginia M. Month.* **51**:101 (May) 1924.

IMMUNITY WITH TETANUS TOXOID

To the Editor:—There has been discussion from time to time here as to the advisability of using tetanus toxoid rather than tetanus antitoxin in industrial injury cases. It would be of enormous benefit to use the toxoid and immunize many of the waterfront employees, since many cases necessitating divided doses of the antitoxin due to sensitivity are seen. Would the protection against tetanus of persons immunized with toxoid and given another dose of the toxoid at the time of injury be as great as is afforded at the present time by the use of the tetanus antitoxin prophylactically?

M.D., California.

ANSWER.—In horses, tetanus toxoid produces a stable, effective and lasting immunity against tetanus. Two injections of 10 cc. each have been given at an interval of one month and a third injection of the same amount a year later. Resulting immunity has been found to last at least eight years. References are given by Gold, Harry: Active Immunization Against Tetanus, *Ann. Int. Med.* **13**:768 (Nov.) 1939. The Paris correspondent of THE JOURNAL, Feb. 3, 1940, p. 424, refers to the work on horses by Ramon and Lemetayer.

Recent experiments by Gold again show that in human beings tetanus toxoid induces an active immune response, with the appearance of tetanus antitoxin in the blood. Gold injected 1 cc. of toxoid two or three times at intervals of one month. Another injection a year or so later raised the antitoxin content in the blood in four or six days to a protective level of 0.1 unit or more per cubic centimeter of serum. "One week after the 'repeat' dose, the antitoxin titer of an immunized subject is from two to fifty times greater than the titer produced by the injection of 1,500 units of tetanus antitoxin." It consequently appears to be established that in persons previously immunized with tetanus toxoid a new injection of toxoid will give better protection than the usual prophylactic injection of 1,500 antitoxin units. In occupations especially liable to traumatic tetanus, active immunization with toxoid for preventive purposes should receive serious consideration.

HEPARIN AND THROMBOSIS

To the Editor:—Have you any information as to the safety and dosage of heparin administration in the different types of thrombosis, and which heparin preparations can you recommend?

F. E. Frytak, M.D., Brooklyn.

ANSWER.—This question cannot be answered adequately in brief form. No physician should use heparin clinically until he is familiar with the literature on the subject. The highly purified material may be given by continuous intravenous infusion for days at a time. It decreases coagulation of the blood and does not do harm, apparently. To keep the clotting time of the blood at three times its normal value, Best and his co-workers employ a saline solution containing 1,000 units (10 mg.) of heparin in each hundred cubic centimeters of solution, which is allowed to run into the vein at the rate of about twenty-five drops a minute. Single intravenous injections are effective in ten minutes and decreased coagulation of the blood persists from one to three hours, depending on the amount injected. A good review article is Mason, M. F.: Heparin: A Review of Its History, Chemistry, Physiology and Clinical Applications, *Surgery* **5**:451 (March), 618 (April) 1939. Other valuable articles are: Murray, G. D. W., and Best, C. H.: The Use of Heparin in Thrombosis, *Am. Surg.* **108**:163 (Aug.) 1938. Murray, D. W. G., and Best, C. H.: Heparin and Thrombosis: The Present Situation, THE JOURNAL, Jan. 6, 1938, page 118. Round Table Discussion: Clinical Problems of Thrombosis, *Minnesota Med.* **23**:1 (Jan., supp.) 1940.

INTRADERMAL AND SCRATCH TESTS IN CHILDREN

To the Editor:—With regard to the relative value of protein tests in cases of allergy: What is the value of scratch tests with individual proteins and pollens? What is the value of scratch tests with proteins and pollens combined into related groups? Does the dilution of the individual proteins necessitated by combining them into group injections with the exigencies to the scratch tests? Have group intradermal tests any definite advantage over individual scratch tests in view of the difficulty of interpretation of the wheal and the erythema as a response to the temporary occlusion of the capillaries of the skin at the site of injection when the control gives a similar experience using the intradermal test? With a practice limited to children, intradermal tests are difficult to carry out in the clinics and even in the hospital if one has any sensibility to the child's reaction to pain.

M.D., Manitoba.

ANSWER.—Cutaneous testing with combined proteins, by either the scratch or the intradermal method, is not to be recommended. It is not nearly so accurate as testing with the individual proteins.

With infants and young children, routine intradermal testing with a large number of allergens is not practical and is not recommended. It is best to do a routine set of scratch tests first and then a few intradermal tests with some of the more important allergens to which there has been no reaction by the scratch method. There can be no doubt that the intracutaneous method is much more delicate than the scratch method, and many significant reactions will be missed if the latter is used alone. This is particularly true for milk in infants and for house dust and feathers in older children, all of which may be important in causing allergic manifestations. No intracutaneous test should ever be done on an infant or child with any environmental allergen unless it has been preceded by a negative scratch test. The same holds for any food which has never been eaten or for any food which is known to have produced violent symptoms. If a food has been regularly eaten without having produced any violent symptoms, it is safe to do an intracutaneous test before having done a scratch test.

ALCOHOLIC INTOXICATION AND CEREBRAL CONCUSSION

To the Editor:—What basis, if any, is there for a statement such as "How difficult it is to distinguish accurately between outward manifestations of concussion and of intoxication is readily apparent from the following comparison of symptoms" (Prof. Laurence Veld, College of Law, University of Nebraska, in "Laboratory Tests for Alcoholism in Motor Accident Prosecutions," *Nebraska Law Bull.*, vol. 17, 1938, No. 2). A long list of purported symptoms in common follows: On a previous page several authorities on brain injuries were cited, but I was unable to find any such statement in them. It is my impression that confusion could exist between patent drunkenness and intoxication, but punch drunkness is a result of cumulative blows to the head over a period of years and is due to no single hard blow. I am familiar with the literature on a similar question in THE JOURNAL, Aug. 28, 1938, but would like a more specific reply, wherein the claim was made that the accused was "punch drunk," "sat on his feet" and knew nothing until he came to several hours later to find himself pacing back and forth behind the bars of a cell. The author leads up to this assertion by repeated statements as to the great similarity between concussion (it had to be simple in this case, as the accused had evidently "recovered" by the next day) and intoxication from alcohol. The result of 0.23 per cent alcohol from a laboratory test was dismissed as a "terrible error."

W. W. Carveth, M.D., Lincoln, Neb.

ANSWER.—By "cerebral concussion" is meant a state of partial or complete unconsciousness plus a widespread paralysis of cerebral function, both of which come on immediately after trauma to the head. A knockout blow delivered in a prize fight is a typical example of how concussion may be produced. In addition to the unconsciousness, which may be for a few seconds or minutes, the respirations may become shallow, the pulse weak and slow, the blood pressure low, the face pale and the extremities cold. The latter signs are dependent on the severity of the concussion; the more severe the concussion, the more frequent will these signs be. Simple cerebral concussion rarely, if ever, simulates alcoholic intoxication. There may be difficulty in a patient who has been drinking and who then develops a cerebral concussion. This occurs quite frequently. Even in such a case the differentiation should not be a problem. In simple concussion of the brain without fracture or compression there is usually some disturbance of consciousness, ranging from "seeing stars" to a temporary loss of consciousness. Severe or prolonged stupor or deep coma is not characteristic of simple concussion. These indicate much more grave brain damage or injury. Here deep sleep from alcohol can be easily differentiated from a deep coma the result of a severe brain injury. In intoxication the breath has the characteristic odor, the stomach content has alcohol in it and the blood stream is positive for alcohol. In a given case of intoxication without any head injury one finds a rapid pulse (almost thready), a florid flushed face, deep respirations with warm extremities. In a recovery from intoxication one also finds tremulous hands, a positive Quinquaud sign, tremulous speech, tremulous tongue and a varied type of mental and emotional behavior ranging from violence and garrulousness to an ordinary sleepy state. "Punch drunk" is a term used to indicate organic brain disease in a fighter who has received many punches to the head as well as knockout blows on repeated occasions usually requiring weeks, months or years to develop.

COOKING PORK TO DESTROY TRICHINELLA

To the Editor:—I have read with great interest the article on trichinosis in the January 6 issue of THE JOURNAL. The article is thorough and satisfactory in every respect except in the matter of prevention. Mention is made of definite processing conditions for pork and pork products prescribed by the Bureau of Animal Industry of the United States Department of Agriculture. And then the statement is made that foods not so prepared should be thoroughly cooked. What is thorough cooking? For instance, how long should bacon be fried? How long should sausages be kept on the grill? How long should fried ham steak be on the fire? How long should pork chops be cooked? What temperature destroys Trichinella larvae? What specimen of the meat indicates that it is sufficiently cooked? Would preliminary boiling in water destroy Trichinella larvae? If so, how long should the meat be boiled? It is really important to know these points because there has been considerable newspaper publicity about trichinosis and many people are asking these questions.

Max Unger, M.D., New York.

ANSWER.—Trichinella larvae are destroyed at a minimum temperature of 137 F., but it is apparent that every part of the cut being cooked must reach this minimum temperature.

Perfectly safe procedure for the preparation of pork or products containing pork is to cook until well done. In the case of fresh pork, a good criterion is the disappearance of the pink color from the center of the piece of meat. In prepared pork such as bacon, the color is fixed so it will remain pink after cooking but the difference between rare and well done is so obvious that it can be recognized with assurance. Pork products cooked to the stage of well done will have reached a temperature of at least 170 F., which is a safety margin of 33 degrees F. over the 137 F. necessary to kill Trichinella larvae.

It is impossible to answer this question in terms of the length of time that bacon should be fried, sausage kept on the grill, fried ham steaks on the fire or pork chops cooked, because the time of cooking is affected by the size of the cut, the nature of the container and the intensity of the flame used in cooking the meat.

Preliminary boiling in water to an inside temperature of 137 F. would destroy Trichinella larvae, but this particular method of applying adequate heat has no special virtue over other methods. Since it would affect the palatability of the product, it is not recommended. Pork cuts and pork preparations should be cooked by the methods which custom has established as producing the most palatable product and cooked for a sufficient length of time under conditions so that there is no trace of pink in the most central point.

SENSITIVITY TO TOBACCO SMOKE

To the Editor:—A patient complains of an almost continuous postnasal discharge and rhinitis. He has been examined by a competent nose and throat specialist, and a diagnosis of local sensitivity to tobacco has been made. The patient has complete relief from the rhinitis and pharyngeal drip almost immediately on stopping smoking. In addition he complains of occasional headache, chest pains, cough and dyspnea, all of which symptoms disappear on cessation of smoking. He has tried, on the advice of a physician, to "denicotinized" cigaret, and although he has tried several such brands he has had no relief. Is this a form of allergy to tobacco or some other constituent of the cigaret? If so, can the patient be properly desensitized? The patient is anxious to continue smoking, if he can be spared the aforementioned symptoms. Do you have any recommendations with regard to a specific remedy or mode of therapy to correct this sensitivity?

M.D., Pennsylvania.

ANSWER.—Tobacco may cause symptoms of the upper respiratory passage in two ways: (1) as a nonspecific irritant with action similar to that of other fumes, e. g. gasoline, steam and smoke, and (2) as a specific allergen in an individual who is allergic.

As it is the tobacco leaf itself to which sensitivity is exhibited rather than the active drug nicotine, obviously "denicotinized" cigarets would be of no help as the tobacco leaf is still present.

Sometimes another brand of cigarets which may contain other volatile substances can be smoked without difficulty.

Desensitization to tobacco by injections has not been found satisfactory. Avoidance of smoking is much better and is to be recommended.

Only about 1 per cent of patients suffering from asthma and perennial vasomotor rhinitis exhibit positive cutaneous tests to tobacco and clinically allergy to tobacco is rare. A large number of these patients, however, are irritated by tobacco smoke. Handlers of tobacco in factories may acquire a contact dermatitis.

Council on Medical Education and Hospitals

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in THE JOURNAL, January 6:

Approved for Intern Training

Lewis-Gale Hospital, Roanoke, Va.

Residencies and Fellowships

Anesthesiology
University Hospitals, Iowa City.

Communicable Diseases
Philadelphia Hospital for Contagious Diseases, Philadelphia.

Malignant Diseases
New England Deaconess Hospital (Palmer Memorial Unit), Boston.

Mixed
La Fayette Home Hospital, La Fayette, Ind.
St. Elizabeth Hospital, La Fayette, Ind.
Lutheran Deaconess Home and Hospital, Minneapolis.
Grace Hospital, Richmond, Va.

Neurology
Welfare Hospital for Chronic Diseases, New York City.

Ophthalmology
Welfare Hospital for Chronic Diseases, New York City.

Pediatrics
Lincoln Hospital, New York City.
Bradford Memorial Hospital for Babies, Dallas, Texas.

Surgery
Lenox Hill Hospital, New York City.

Thoracic Surgery
University of Oregon Medical School Hospitals and Clinics, Portland.

Tuberculosis
Los Angeles Sanatorium, Duarte, Calif.
Bret Harte Sanatorium, Murphys, Calif.
San Diego County General Hospital, San Diego, Calif.
Sunnyside Sanatorium, Indianapolis.
Norfolk County Hospital, South Braintree, Mass.
Ingham Sanatorium, Lansing, Mich.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, March 2, page 823.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part II, May 1-2; Part III, June or July, to be given in medical centers having five or more candidates desiring to take the examination. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Oral.* Part II. New York, June 10-11. Applications must be received 60 days prior to examination. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: November 1940. *If a sufficient number of applications were received before March 1 an examination will be held at New York, June 10-14.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Following the meeting of the American College of Physicians and in advance of the meeting of the American Medical Association. Applications must be on file six weeks in advance. *Written.* October 21. Applications must be on file by September 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral and pathologic examinations (Part II) for all candidates (Groups A and B)* will be conducted in Atlantic City, N. J., June 7-10. *Applications for admission to Group A, Part II, examinations must be on file not later than March 15.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Oral. New York, June 8-10; Cleveland, Oct. 5. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Chicago, June 15-16. Applications must be on file on or before April 15. Sec., Dr. Fremont A. Chandler, 6 North Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 3-5. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: New York, June 10-11. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Memphis, Tenn., Nov. 17, preceding the annual meeting of the American Academy of Pediatrics. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Cincinnati, May 17-18. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: New York, June 7-10. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., Rochester, Minn.

AMERICAN BOARD OF SURGERY: Various centers, April 1. Sec., Dr. J. Stewart Rodman, 225 South Fifteenth St., Philadelphia.

Wyoming October Examination

Dr. M. C. Keith, secretary, Wyoming State Board of Medical Examiners, reports the written examination held at Cheyenne, Oct. 2, 1939. The examination covered thirteen subjects and included seventy-eight questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Six physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Creighton University School of Medicine		(1938)	85
University of Wisconsin Medical School		(1938)	83.2

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1938)	N. B. M. Ex.
University of Colorado School of Medicine		(1937)	Colorado
University of Kansas School of Medicine		(1937)	Kansas
Tulane University of Louisiana School of Medicine		(1938)	Louisiana
University of Nebraska College of Medicine		(1934)	Nebraska
Jefferson Medical College		(1924)	Utah
Osteopath *			Nebraska

* Licensed to practice osteopathy and surgery.

Connecticut November Examinations

Dr. T. P. Murdock, secretary, Connecticut Medical Examining Board, reports the written examination held at Hartford, Nov. 14-15, 1939. The examination covered nine subjects and included seventy questions. An average of 75 per cent was required to pass. Forty-six candidates were examined, seventeen of whom passed and twenty-nine failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine	(1937) 77.6,†	(1938)	75
Loyola University School of Medicine		(1939)	75
Harvard Medical School		(1938)	79.9
Tufts College Medical School	(1938) 75,† 77.9,		81
New York University College of Medicine	(1937) 79.4,†		84.7†
University of Rochester School of Medicine	(1936)		77.5,
	(1937) 78.4,† (1939) 79.6		
Jefferson Medical College of Philadelphia		(1939)	76.9
McGill University Faculty of Medicine		(1939)	75†
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1920)	75
Schlesische Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau		(1921)	75
Université de Genève Faculté de Médecine		(1938)	75†

School	FAILED	Year Grad.	Per Cent
University of Illinois College of Medicine		(1937)	66.6
Temple University School of Medicine		(1931)	64.9
University of Vermont College of Medicine		(1938)	71.4
Medizinische Fakultät der Universität, Wien		(1923)	60.5,
	(1927) 71.7, 71.9, (1934) 67.5, (1936) 72.9, (1937) 66.2		
Deutsche Universität Medizinische Fakultät, Prag		(1936)	72.1
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg		(1927)	73.7
Albertus-Universität Medizinische Fakultät, Königsberg		(1924)	68.3
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen		(1934)	60.6
Georg August-Universität Medizinische Fakultät, Göttingen		(1927) 65.2, (1937)	62.7
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main		(1938)	70
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1925)	62.9
Schlesische Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau		(1927)	69.5
Universität Heidelberg Medizinische Fakultät		(1920)	67.8
Universität Leipzig Medizinische Fakultät		(1923)	67.5
Vereinigten Friedrichs-Universität Medizinische Fakultät, Halle-Wittenberg		(1930)	65.4
Magyar Királyi Erzsébet Tudományegyetem Orvositudományi, Pecs		(1937)	65.7
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest		(1937)	63.5
Regia Università degli Studi di Bologna Facoltà di Medicina e Chirurgia	(1937) 71.6,	(1938)	65.8
Regia Università di Napoli Facoltà di Medicina e Chirurgia		(1936) 66.2, (1937)	69
Université de Genève Faculté de Medecine		(1934)	65.8
Osteopath *			

Twenty-seven physicians were successful in the oral examination held for endorsement applicants at Hartford, November 28. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine		(1931)	California,
	(1935), (1936), (1937),† (1937), (1938, 2)		N. B. M. Ex.
George Washington University School of Medicine		(1927)†	New York
Georgetown University School of Medicine		(1936)	N. B. M. Ex.
Indiana University School of Medicine		(1928)†	Indiana
Tulane University of Louisiana School of Medicine		(1916)	New York
Johns Hopkins University School of Medicine		(1933), (1936)†	Maryland
Harvard Medical School	(1930)†	N. B. M. Ex., (1936)†	Maryland
Tufts College Medical School		(1938)†	N.B.M.Ex.
Columbia University College of Physicians and Surgeons		(1934), (1936)	New York

Cornell University Medical College	(1936),† (1938)†	N.B.M.Ex.
Fordham University School of Medicine	(1915)†	New York
New York University College of Medicine	(1932)	New York
University of Pennsylvania School of Medicine	(1936)	Michigan
Vanderbilt University School of Medicine	(1936)	Tennessee
University of Texas School of Medicine	(1927)†	New York
University College of Medicine, Richmond	(1911)†	Virginia
McGill University Faculty of Medicine	(1935)	New York

* Examined in medicine.
† License has not been issued.

Book Notices

Epidemiology in Country Practice. By William Norman Pickles, M.D., Medical Officer of Health, Aysgarth Rural District, Yorkshire. With preface by Major Greenwood, F.R.S., D.Sc., F.R.C.P., Professor of Epidemiology and Vital Statistics in the University of London. Cloth. Price, $2.50. Pp. 110, with illustrations. Baltimore: William Wood & Company, 1939.

This well written book should be read by the practicing physician residing in rural or urban areas. The obvious desire to find the clinical and epidemiologic answer to the illnesses coming under the scrutiny of the careful and thoughtful physician should prove an inspiration to the reader. This striking paragraph of the introduction deserves full quotation:

> The general practitioner is in the forefront of the battle and his experience must necessarily be personal and vital. No consulting physician can ever have the opportunity to follow the whole course of such a disease as epidemic myalgia in the same way as the general practitioner, because of the latter's more intimate association with his patients.

Modern public procedure certainly endorse these sentiments.

The second quotation, taken from page 5, middle paragraph, is all inclusive and exceedingly valuable advice:

> The object of this book is primarily an attempt to stimulate other country doctors to keep records of epidemic disease and to put before them the unique advantages that their position gives them, to impress on those interested in epidemiology the value of the natural history method of investigation of these diseases, and to awaken some interest in the layman, whose help in these matters cannot be overestimated.

Of particular interest to health officers are the author's observations on the school teacher as an epidemiologist (p. 6), the reference to the school epidemic investigation of the Medical Research Council (p. 8), the sound advice to the young physician entering country practice to regard as a hobby if not otherwise the natural history of epidemic diseases (p. 9) and the comments of the often vexed question of school closure (p. 22). The chapter on epidemic catarrhal jaundice is alone worth the price of the book. Altogether this book is a welcome addition to the volumes in the field of medicine and public health, and it offers an example to the practicing physician in the manner cases of communicable diseases should be studied for informative data and reported to health departments for adoption of accepted or known methods of control.

The Electrocardiogram and X-Ray Configuration of the Heart. By Arthur M. Master, B.S., M.D., F.A.C.P., Associate in Medicine and Chief, Cardiographic Laboratory, The Mount Sinai Hospital, New York. Cloth. Price, $4.50. Pp. 222, with 100 illustrations. Philadelphia: Lea & Febiger, 1939.

This monograph sets out to demonstrate that the electrocardiographic appearance is determined to a large extent by the contour, size and position of the heart in the chest. The author clearly demonstrates that considerable variations in the electrocardiogram can be caused in these ways and that the effect of these other factors must be excluded before the interpretation is made that an underlying myocardial disease exists. The monograph will be illuminating to those few cardiologists who tend to read into the electrocardiogram evidences of myocardial disease when they are not present. The subject matter has recently received new impetus and is becoming more and more widely recognized and, as the author states, the type of body structure, the position of the patient and the location of the heart in the chest must all be considered in arriving at an interpretation of a particular record. The development of each topic is begun with a historical survey and is followed by case presentations, each with illustrations of the electrocardiograms and teleoroentgenograms; the reproduction of these is excellent and the details of the x-ray plates are clearly discernible. The presentation, however, is disconnected; the facts are not sufficiently summarized, as could have been done by expanding the text and adding short summaries to each section. The descriptions of the electrocardiograms are not consistent, and a number of obvious errors are apparent. For example, in figure 25 the author speaks of a large Q wave in lead 3, which is not apparent in the record. Similar errors in the text give the impression of superficiality on the part of the author which is regrettable. The subject matter includes a consideration of the effects on the electrocardiogram of age, of change in body position, of respiration, of body habitus, of hypertension, of valvular disease, of congenital heart disease, of pulmonary disease, of chest deformities, of pericarditis and of hyperthyroidism. This monograph is not suitable for the beginner in electrocardiography and is obvious to one of large experience. It is useful for the electrocardiographer of experience who has developed the habit of reading into the record more abnormalities than actually exist in the electrocardiogram.

In memoria del Prof. Fabio Rivalta: La "reazione di Rivalta," scritti medici in suo onore. Società medico chirurgica di Romagna. Paper. Price, 50 lire. Pp. 398, with illustrations. Faenza: Fratelli Lega, 1939.

The memorial volume published by the Medico-Chirurgical Society of Romagna in honor of Prof. Fabio Rivalta contains some excellent monographs by leading physicians and surgeons of Romagna and other parts of Italy who have either been associated with Rivalta personally or who are now at the head of medical clinics in hospitals where Rivalta served as physician-in-chief. The subjects range from lipoid nephrosis to undulant fever and to monographs on the last disease and death of the composer Bellini. There is also an excellent monograph on the use of insulin, modified by bicarbonate treatment.

The first reaction, introduced nearly forty-three years ago, affords a simple and reliable method of differentiating between transudates and exudates. This reaction is well known and described in almost all the textbooks on clinical and laboratory methods. Wells's "Chemical Pathology" and Kolmer's "Approved Laboratory Technique" give detailed description of the method. The second reaction, which Rivalta announced in the *Policlinico* in 1910, is almost unknown to the English speaking world. The first reaction can be easily performed by any laboratory technician. About 200 cc. of distilled water is placed in a conical beaker, and three drops of glacial acetic acid are added. After thorough mixing one or two drops of the fluid under examination are placed in this weak acid solution. A distinct cloud will be observed in the fluid if the material is an exudate, whereas the reaction will be negative if the fluid is a transudate. Professor Rivalta proved that this phenomenon is due to the presence in an exudate of large amounts of globulin, which is absent in transudates.

The second reaction has been introduced to give physicians a simple method of determining in serum and blood an index of antibody production, in both acute and chronic infectious processes. It is performed by placing in a conical beaker 200 cc. of distilled water and placing therein three drops of glacial acetic acid. In other containers the technician makes serial dilutions of blood serum and of whole blood from 1:200 to 1:2,000 in a weak alkaline solution of distilled water (distilled water 100 cc., sodium carbonate saturated solution one drop). By performing the reaction with varying dilutions of the patient's serum ranging from 1:200 to 1:2,000 one can get an approximate quantitative idea of the antibody production taking place.

The hemoreaction and the seroreaction of Rivalta seem to have been studied on a large number of patients in many chronic and acute infectious processes. From the monographs contained in this volume by Chiadini it seems that these reactions are growing in popularity. Both reactions are simple and any laboratory technician can perform the test in a few minutes. It is noteworthy that a close parallelism has been found between the quantitative reactions and the leukocytosis. Gironi presents also an important monograph showing that the reaction appears to be indicative of the amounts of antitoxin present in the serum. He has immunized animals with ricin and found that with the production of antiricin the reaction becomes positive in higher and higher dilutions as the titer of antiricin increases. As the antibody titer begins to go down the reaction also continues positive only in the lower dilutions. It is to be hoped that clinical pathologists and biochemists will be attracted to these

simple methods of obtaining a glimpse of the immunity reaction going on in the animal and in the patient. This method may supply to the clinician a prognostic sign of the highest value and from the monographs reviewed it appears that many great clinicians in Italy have actually found the seroreaction of unquestionable merit in prognosis.

To the chemist and biochemist, working in laboratories, devoted to the production of antitoxins and antiserums, this reaction supplies a reliable and inexpensive method of determining the potency and also knowing when the animal under immunization has reached the highest level of antibody production and then proceed from this point to subject the serum to the quantitative methods of potency assay expressed in units per cubic centimeter. This would eliminate the necessity of costly and time consuming assays during the process of immunization and would afford a simple inexpensive means of knowing, at intervals, in the process of immunization, how well the antitoxin production was going on in the animal.

Blood Groups and Blood Transfusion. By Alexander S. Wiener, A.B., M.D., Serologist and Bacteriologist in the Office of the Chief Medical Examiner of New York City. Second edition. Cloth. Price, $5. Pp. 304, with 52 illustrations. Springfield, Illinois, & Baltimore: Charles C. Thomas, 1939.

This edition has been revised to include the advances in the knowledge and practice of blood grouping since the issue of the book in 1935. Transfusion and the medicolegal uses of blood group tests have received special consideration. The main topics of the contents are the four blood groups and their use in the selection of donors in transfusion, in anthropologic studies, in cases of disputed parentage and in the identification of stains. There are chapters also on the heredity and constitutional nature of blood groups; on agglutinogens M and N, their heredity; on subgroups A and AB; on individual differences in animal blood, and on blood groups in relation to disease. Blood transfusion is discussed with respect to history, selection of donors, technic, indications and results. The book is a standard work in its field, which it covers competently and comprehensively. It will be of interest and value not only to those concerned with blood transfusion and with problems of parentage and identification but also to the immunologist, the geneticist and the anthropologist.

Die Gonorrhöe der Frau: Ein Leitfaden für die Praxis. Von Dr. Karlheinz Sommer, Marinestabsarzt z. Zt. Komm. an die Universitäts-Frauenklinik Leipzig. Paper. Price, 8.50 marks. Pp. 185, with 47 illustrations. Leipzig: Georg Thieme, 1939.

This monograph is well done and is nicely illustrated with both gross and microscopic plates. The subject is approached with an underlying study of the anatomy and physiology of the female generative tract. The subject of gonorrhea is taken up from the bacteriologic point of view before the discussion of the effects of the disease on the female. The disease in women is studied from the result on the lower and then on the upper tracts. Treatment is adequately covered, with mention being given to all used forms of treatment. Gonorrhea in pregnancy and the remote complications of the disease are also covered. For one who is especially interested in the subject this little book should be of great value.

Etudes neurologiques. Huitième série. Par Georges Guillain, professeur de clinique des maladies du système nerveux à la Faculté de médecine de Paris. Table générale des matières des "Etudes neurologiques" (séries I à VIII). Paper. Price, 90 francs. Pp. 419, with 72 illustrations. Paris: Masson & Cie, 1939.

Guillain, the author of the present collection of reprints, is a successor of Charcot, Dejerine and Marie as professor of neurology in the Faculty of Medicine in the University of Paris and neurologic director of the Salpêtrière. The present volume is the eighth of a series, all planned on the same principle, each containing a collection of reprints by Guillain which have been published elsewhere with a few exceptions. This book concludes with an index to all the eight volumes which have appeared. The present volume is made in five parts. The first part contains five articles dealing with the pathology of the brain. The second part contains five articles on the peduncles, mouth and cerebellum. The third part contains only three articles on the spinal cord. The fourth deals with pathology of the cranial and spinal nerves, and in it five subjects are discussed. The last section is the largest, having ten varied reprints dealing with such subjects as the clinical and biologic study of the care of acromegaly, a discussion of a case of milkman's syndrome and a study of the labyrinth in Paget's disease. All these papers are excellent and represent the best of French neurology. They are composed either of one thorough case history with the pathologic changes observed or they present topics which are illustrated by a number of case histories. One of the papers is in English and carries with it a French translation. This paper is on radiculoneuritis with acellular hyperalbuminosis of the cerebrospinal fluid, which appeared in the *Archives of Neurology and Psychiatry* in November 1936. For those physicians who read French and who wish to be acquainted with a good sample of French neurology, this collection of reprints would be of great value. In fact, one can urge on the neurologist a thorough acquaintance with all the eight volumes of reprints in this series by Guillain.

Lehrbuch der allgemeinen Pathologie und der pathologischen Anatomie. Von H. Ribbert. Bearbeitet von Professor Dr. H. Hamperl, Prosektor am Pathologischen Institut der Universität Berlin (Charité-Krankenhaus). Twelfth edition. Paper. Price, 27 marks. Pp. 634, with 760 illustrations. Berlin: F. C. W. Vogel, 1939.

For this hurried and harried generation of medical students the name of Ribbert can have little significance; indeed, a possible suggestion of antiquity implied in a twelfth edition would presumably deter rather than recommend perusal. But survival does at times indicate usefulness, and this new Ribbert, revised by Hamperl, is definitely a useful book. One might designate it a streamlined edition, if such a descriptive term is permissible in connection with so orthodox and orderly a subject as general pathology has become in the decades that have followed the exciting era of Virchow. The editions of Ribbert which were edited by Mönckeberg and later by Sternberg more than maintained the earlier traditions. The present text, while adhering to the original, has greatly amplified and broadened the point of view, so that it is quite abreast of modern trends and much has been added in illustrative material, which is in the main excellent in character and selection. Hamperl is primarily the morbid anatomist trained in the Viennese school; it is natural that it is form, rather than form plus function, that colors the book, but it would probably be asking too much in a textbook of pathology to reflect changes in clinical thought that are far in advance of the postmortem room and the histopathologic laboratory. Virchow himself was primarily the physiologist who taught pathologic anatomy, but with the course of time and the crystallization of departmental teaching the morbid anatomist can hardly be expected to teach pathology and to write textbooks that would treat of function rather than form. Of all modern textbooks one finds a consistent effort to do just that only in Tendeloo, and this book has never been popular in either continental or American schools. All of which by no means detracts from the recognition of the excellent quality of the new edition, which presents general as well as special pathology in a well illustrated, well balanced and orderly fashion. Attributes such as these have made the Ribbert an exemplary student textbook for several generations. But this, as a natural corollary, must exclude features which might make the book more useful for the clinician and the investigator. An interesting innovation is found in footnotes that give both Greek and Latin derivation of descriptive terms—in itself an interesting sidelight into the modern German educational system. In Ribbert's day a thorough grounding in the classics was still obligatory.

Gynecology: Medical and Surgical. By P. Brooke Bland, M.D., F.A.C.S., Consulting Obstetrician to the Jefferson Medical College Hospital, Philadelphia. Assisted by Arthur First, M.D., Associate in Obstetrics, the Jefferson Medical College Hospital, Philadelphia. Third edition. Cloth. Price, $8. Pp. 843, with 445 illustrations. Philadelphia: F. A. Davis Company, 1939.

According to the preface, the author has practiced gynecology for more than thirty-five years. His book describes the sound principles and conservative methods resulting from this long experience. It is a good textbook, well proportioned, full and accurate, but it has two obvious weaknesses. The first is prolixity. At present a crisp factual style is preferred; the third edition has been rewritten but it is filled with the slow phraseology of the first (1924). The second weakness is the paucity of fact. Advantage has not been taken of the abundant literature

of gynecologic statistics. For example, gynecologists agree that approximately 25 per cent of patients with carcinoma of the cervix in a well treated series will survive five years or more after treatment. On this subject the author says "The duration of life . . . is longer in body than in cervical carcinoma." Nowadays such vagueness is unsatisfying. Facts are available; let us have them! The reader will find the literature nicely tabulated in a separate chapter of twenty-seven pages on referred reading. Illustrations are good and the color plates of normal and pathologic organs are superb. This volume will be more useful to undergraduates than to practitioners.

Psycho-Dynamics of Chewing. By H. L. Hollingworth. Archives of Psychology, No. 230. Paper. Price, $1.50. Pp. 90. New York: Columbia University, 1939.

By what appear to be adequate experiments on twenty human subjects, the author endeavors to explain the role of sustained mastication in the psychophysical economy of human activity. This mastication is not that of chewing a meal but chewing on gum or on indifferent substances when at rest or when busy with other mental or physical work. The several lines of experiments indicate clearly that such chewing results in a decrease of neuromuscular tension and most of the subjects reported that they actually felt more relaxed as a result of the chewing. The slight physical cost of the chewing process itself may thus result in economy by muscular relaxation in the rest of the body. The author suggests that this relation between sustained chewing and relaxation is a carry over from the fact that, in civilized man at least, the mastication in connection with eating is usually accompanied by sitting down and otherwise relaxing. This is an interesting and possibly significant study. One stenographer showed increased speed in typing while chewing. Another showed increased speed but decreased accuracy. In the main this work indicates that there may be more physiologic significance to the gum chewing habit of Americans than would appear on the surface.

A Survey of Hospital Services and Finances in the Philadelphia Area Based on Data Collected from 67 Philadelphia Hospitals for the Year 1937. Sponsored by the Hospital Council of Philadelphia. Paper. Price, $1. Pp. 59. Philadelphia, 1939.

This report on the survey of hospital services and finances in the Philadelphia area is best summed up in its own statement of conclusions and recommendations, in which it is stated that the purpose is to describe the amounts and types of services rendered and that it was not intended to establish categorical conclusions or to set up a qualitative scale for measuring hospital service. It is stated, nevertheless, that the task of gathering the data would hardly be justified without some suggestions, and with this in mind the author makes fifteen suggestions looking toward the improvement of hospital service in the Philadelphia area. These conclusions and recommendations might apply to other areas as well. In fact, the whole report furnishes profitable reading for those interested in hospital service for any given community.

Obstetrícia normal. Pelo Professor Raul Briquet, lente catedrático de Clínica obstétrica e puericultura neo-natal da Universidade de S. Paulo. Cloth. Pp. 538, with 427 illustrations. Rio de Janeiro: Livraria Editora Freitas Bastos, 1939.

This volume on normal obstetrics represents an outline of present day obstetric thought and teaching. Its content is limited to the problems of normal midwifery, so that this book should meet a real need in South American countries, for which it was probably written. The general practitioner will find a wholesome presentation. The book opens with a chapter on the medical historical background of pregnancy and labor and ends with a chapter dealing with the newborn. The physiology and conduct of pregnancy and labor are described and profusely illustrated. There is a long chapter on multiple births and the problems which these entail. The book could be improved by a more detailed description of some of the major complications of pregnancy, such as infection, toxemia and hemorrhage, for these cannot be divorced from normal obstetrics. Many illustrations have been taken from Bumm's textbook and De Lee's Principles and Practice of Obstetrics. The quality of the illustrations, the paper and the binding could be greatly improved on.

Physiology in Health and Disease. By Carl J. Wiggers, M.D., Professor of Physiology in the School of Medicine of Western Reserve University, Cleveland, Ohio. Third edition. Cloth. Price, $9.50. Pp. 1,144, with 218 illustrations. Philadelphia: Lea & Febiger, 1939.

The present edition is a great improvement over the first. A number of new illustrations have been added. The entire section on muscle has been rewritten and rearranged, as has also the second section on neurophysiology, so that both read much more smoothly. Despite the inclusion of new material, the total number of pages is slightly less than in the first edition but considerably greater than in the second edition. Despite the general improvement in composition, the subject matter appears to be still rather unbalanced. The number of pages in the section on neurophysiology has been increased, but in most of the other sections except the one on circulation the number has been reduced. This may perhaps be justifiable in most instances but certainly gastrointestinal physiology and metabolism deserve more balanced treatment in comparison to circulation. The illustrations are excellent. The author has maintained the policy of putting references in footnotes on the pages where used. This facilitates to some extent the checking of references by readers. Instances of unusual and even incorrect word usage are rather more frequent than one expects in a scientific work of this caliber, e. g. "exorbitant" for "excessive" (p. 980). However, the subject matter is sound.

The British Encyclopaedia of Medical Practice Including Medicine, Surgery, Obstetrics, Gynaecology and Other Special Subjects. Under the General Editorship of Sir Humphry Rolleston, Bt., G.C.V.O., K.C.B., M.D. Volume XII: Tetanus to Yellow Fever. Cloth. Price, $12. Pp. 672, with 48 illustrations. Toronto & London: Butterworth & Co., Ltd., 1939.

The latest volume of this notable series carries all of the conditions from "tetanus" through "yellow fever." This means, of course, such important subjects as the thymus, tonsils, toxicology, trachoma, tuberculosis, tumors, urine, uterus, vertigo, vitamins and whooping cough. Such distinguished names as those of Kenneth Walker, Manson Bahr, McCallan and Sir Leonard Rogers are an indication of the high quality of material that this volume provides. It is quite up to the previous volumes in this excellent series.

Therapeutisches Taschenbuch der wichtigsten Krankheiten der warmen Länder: Ein kurzer Ratgeber. Von Prof. Dr. F. Mühlens, Direktor des Instituts für Schiffs- und Tropenkrankheiten, Hamburg. Boards. Price, 3 marks. Pp. 73, with 16 illustrations. Leipzig: Georg Thieme, 1939.

This pocket handbook discusses the main clinical features, prevention and treatment of the principal tropical diseases. Discussions are so brief and sketchy that one can scarcely credit its intended use for the medical profession. It is an example of oversimplification.

Clinical Diagnosis by Laboratory Methods: A Working Manual of Clinical Pathology. By James Campbell Todd, Ph.B., M.D., and Arthur Hawley Sanford, A.M., M.D., Professor of Clinical Pathology, University of Minnesota (The Mayo Foundation), Rochester. Ninth edition. Cloth. Price, $6. Pp. 841, with 368 illustrations. Philadelphia & London: W. B. Saunders Company, 1939.

The revision of this book brings it abreast of the time, as far as this can be done with a standard textbook. Most notable additions are the new section on hematopoiesis and the methods for the Bodansky determination of phosphate and phosphatase, the Power and Wakefield sulfate method, the hippuric acid test and serum lipase, ascorbic acid and sulfanilamide determinations. As it has always been, this book is a fine textbook for laboratory technicians and should be included in every laboratory no matter how small that laboratory may be.

Die Gonorrhöe in der Allgemeinpraxis. Von Professor Dr. Paul Mulzer, Direktor der Universitäts-Klinik für Haut- und Geschlechtskrankheiten in Hamburg. Paper. Price, 8.40 marks. Pp. 125, with 10 illustrations. Leipzig: Johann Ambrosius Barth, 1939.

This small volume covers gonorrhea in both the male and the female. The subject is taken up from the bacteriologic and clinical points of view and is well handled. Although meager in illustrations, the text is fairly complete. Particularly interesting is the section on treatment, in which heat and specific chemotherapy with sulfanilamide are discussed. In the section on infantile vulvovaginitis, mention is not made of estrogenic therapy.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Accident Insurance: Death Following Administration of Neoarsphenamine.—The defendant insurance company promised to pay to the beneficiary certain benefits if the death of the insured resulted from bodily injury effected solely through external, violent and accidental cause and not from physical or mental infirmity or illness or disease of any kind. The insured had syphilis and was receiving medical treatment consisting of alternate hypodermic injections of bismuth and neoarsphenamine. Following the fifth administration of the arsenical, administered about a month after the first, the insured suffered a violent reaction and died. The insurer refused to pay the beneficiary, the beneficiary sued, the trial court directed a verdict for the insurer and the beneficiary appealed to the supreme court of New York, appellate division, first department.

The quantity of neoarsphenamine injected had commenced with 0.3 Gm. and was gradually increased to 0.6 Gm. and had been administered in the customary manner and without untoward incident. The physicians called as witnesses for the beneficiary testified that unfavorable reactions to injections of neoarsphenamine occur very rarely, that the average risk of death is about one in 7,000 to 11,000 instances but that an unfavorable reaction to the drug is always a possibility. They stated that medical science has no way of anticipating which patient will be hypersensitive to the drug. These witnesses testified, too, that the existence of a syphilitic condition in the insured in no way contributed to his death, although it was because of the presence of that disease that the drug was administered. In their opinion the death resulted directly and solely because of the treatment being received by the insured.

To the court, it was clear that the death resulted from an accident within the meaning of the insurance policy. It has been held, the court pointed out, that if a fatal infection results from the use of a hypodermic needle the case is one of accidental death within the meaning of a similar insurance policy. The fact that the insured intentionally incurred the administration of the drug did not preclude a finding that death occurred through accidental means. In the present case, the hypodermic needle did not introduce a germ or other foreign substance which caused infection; it merely introduced the drug sought to be injected. Death, however, occurred from the extremely rare circumstance that the insured had some physical peculiarity that made him hypersensitive to the neoarsphenamine. The predisposition to unfavorable results from neoarsphenamine did not constitute an infirmity or disease within the meaning of the policy.

The judgment of the trial court was reversed and a new trial ordered.—*Berkowitz v. New York Life Ins. Co. (N. Y.), 10 N. Y. S. (2d) 106.*

Optometery: Obtaining Money Under False Pretenses.—For a period of four years the accused drove a car for an optometrist and acted as a "flunky" for him, carrying his instrument case and generally helping him in his work. During these years the optometrist traveled extensively through southern Missouri. After the traveling optometrist quit that territory, the accused formed an association with one King, and the two went about examining eyes and prescribing glasses. During the course of their "practice" they examined the eyes of the Cooper family, consisting of the husband, the wife and a child. This family was induced to buy three pairs of spectacles for which the husband gave to the accused checks in the amount of $59.94. The spectacles were to be delivered within a few days but were in fact never delivered. The checks were cashed by the accused and thereafter he was convicted on a charge of obtaining money under false pretenses and appealed to the Supreme Court of Missouri.

Neither King nor the accused had licenses to practice medicine or optometry. The state introduced substantial evidence tending to prove that the accused stated to a number of persons that he was a physician and had been practicing medicine in Springfield; that "Dr. King" had treated eyes and fitted glasses for many of his, the accused's patients, and had always given satisfaction; that he, the accused, and King had rented rooms at West Plains and were going to locate there and that if the glasses they sold were not satisfactory they would make adjustments. One witness and his wife testifying for the state said that they had bought spectacles from the accused and King and had paid them. The receipt given for this payment was signed by the accused as "Dr. B. H. Craft, 456 Market Street, Springfield, Missouri." Mrs. Cooper testified that when King was "pretentiously" examining her eyes he looked up at the accused and said "Doctor, haven't I treated lots of your patients and always given satisfaction in fitting glasses?" and that the accused replied "You sure have." The accused contended that he acted merely as a "flunky" for King, as he had done for the optometrist, and that King pretended to be an eye specialist but that he later found that "the highest ranking King ever obtained was that of a prizefighter." The court, however, was apparently not impressed with the contentions of the accused and after examining the entire record found it free from error. The judgment of conviction was therefore affirmed.—*State v. Craft (Mo.), 126 S. W. (2d) 177.*

Society Proceedings

COMING MEETINGS

Academy of Physical Medicine, Richmond, Va., Apr. 24-26. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.
Alabama, Medical Association of the State of, Birmingham, Apr. 16-18. Dr. D. L. Cannon, 519 Dexter Ave., Montgomery, Secretary.
American Association for the Study of Goiter, Rochester, Minn., Apr. 15-17. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
American Association for the Study of Neoplastic Diseases, Louisville, Ky., Apr. 11-13. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
American Association of Anatomists, Louisville, Ky., Mar. 20-22. Dr. E. R. Clark, Dept. of Anatomy, Univ. of Pennsylvania School of Medicine, Philadelphia, Secretary.
American Association of Pathologists and Bacteriologists, Pittsburgh, Mar. 21-22. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.
American Association of the History of Medicine, Atlantic City, N. J., May 4-5. Dr. Henry E. Sigerist, 1900 East Monument St., Baltimore, Secretary.
American College of Physicians, Cleveland, Apr. 1-5. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.
American Orthopedic Association, Kansas City, Mo., May 4-10. Dr. Ralph K. Ghormley, 110 Second Ave. S.W., Rochester, Minn. Secretary.
American Pediatric Society, Skytop, Pa., May 2-4. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.
American Physiological Society, New Orleans, March 13-16. Dr. Philip Bard, Johns Hopkins Medical School, Baltimore, Secretary.
American Society for Experimental Pathology, New Orleans, March 13-16. Dr. Paul R. Cannon, Dept. of Pathology, University of Chicago, Chicago, Secretary.
American Society for Pharmacology and Experimental Therapeutics, New Orleans, March 13-16. Dr. G. Philip Grabfield, 319 Longwood Ave., Boston, Secretary.
American Society of Biological Chemists, New Orleans, Apr. 13-17. Dr. C. G. King, Dept. of Chemistry, Univ. of Pittsburgh, Pittsburgh, Secretary.
American Surgical Association, St. Louis, May 1-3. Dr. Charles G. Mixter, 319 Longwood Ave., Boston, Secretary.
Arizona State Medical Association, Tucson, Apr. 18-20. Dr. Leslie R. Kober, 15 East Monroe St., Phoenix, Secretary.
Arkansas Medical Society, Fort Smith, Apr. 15-17. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.
Federation of American Societies for Experimental Biology, New Orleans, Mar. 13-16. Dr. D. R. Hooker, 19 West Chase St., Baltimore, Secretary.
Florida Medical Association, Tampa, Apr. 29-May 1. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
Georgia, Medical Association of, Savannah, Apr. 23-26. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
Iowa State Medical Society, Des Moines, May 1-3. Dr. R. L. Parker, 3510 Sixth Ave., Des Moines, Secretary.
Louisiana State Medical Society, New Orleans, Apr. 22-24. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.
Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 23-24. Dr. Richard T. Shackelford, 1211 Cathedral St., Baltimore, Secretary.
Minnesota State Medical Association, Rochester, Apr. 22-24. Dr. B. B. Sounter, 493 Lowry Medical Arts Building, St. Paul, Secretary.
Missouri State Medical Association, Joplin, Apr. 30-May 1. Mr. E. H. Bartelsmeyer, 634 North Grand Blvd., St. Louis, Executive Secretary.
Nebraska State Medical Association, Omaha, Apr. 22-25. Dr. R. B. Adams, 416 Federal Securities Building, Lincoln, Secretary.
Northern Tri-State Medical Association, Battle Creek, Mich., Apr. 9. Dr. R. Benjamin Gillett, 320 Michigan St., Toledo, Ohio, Secretary.
Pacific Coast Surgical Association, Portland, Ore., Apr. 3-6. Dr. H. Glenn Bell, University of California Hospital, San Francisco, Secretary.
Society for the Study of Asthma and Allied Conditions, Atlantic City, N. J., May 4. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.
Southeastern Surgical Congress, Birmingham, Ala., Mar. 11-13. Dr. Benjamin T. Beasley, 701 Hurt Building, Atlanta, Ga., Secretary.
Tennessee State Medical Association, Chattanooga, Apr. 9-11. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Psychiatry, New York

90: 517-770 (Nov.) 1939. Partial Index

Significance of Special Mental Tests for Diagnosis and Prognosis in Schizophrenia. K. Goldstein, New York.—p. 575.
*Use of Metrazol in Treatment of Acute Alcoholism. L. L. Orenstein, K. M. Bowman, Julia R. Kagan and W. Goldfarb, New York.—p. 589.
*Psychoses Associated with Epilepsy. R. A. Clark and J. M. Lesko, Boston.—p. 595.
Sensitivity. E. Kahn and Helen G. Richter, New Haven, Conn.—p. 609.
Attitude of Neurologists, Psychiatrists and Psychologists Toward Psychoanalysis. A. Myerson, Boston.—p. 623.
Nitrogen Inhalation Therapy for Schizophrenia: Preliminary Report on Technic. F. A. D. Alexander and H. E. Himwich, Albany, N. Y.—p. 643.
Physiologic Studies of Experimental Insulin and Metrazol Shock: II. Vascular and Respiratory Responses During Metrazol Convulsions. D. W. Lougheed and G. E. Hall, Toronto.—p. 657.
Results of Shock Therapy in Treatment of Affective Disorders. D. C. Wilson, University, Va.—p. 673.
Comparative Study of Hypoglycemic Shock Treatment and Control Observation in Schizophrenia. J. Notkin, C. E. Niles, F. J. DeNatale and G. Wittman, Poughkeepsie, N. Y.—p. 681.
Glucose and Insulin Tolerance: Relation to Insulin Shock Treatment. M. Kaplan and A. A. Low, Chicago.—p. 689.
Metrazol Reaction in Patients with Arterial Hypotension. Alexandra Adler, Boston, and Hoses W. McAdoo, Arlington, Mass.—p. 699.
Subclinical Pellagra—Psychotic Type—Treated Successfully with Coramine (Nicotinic Acid): Case. M. H. Weinberg, Pittsburgh.—p. 701.
Psychiatric Aspects of Porencephaly. E. L. Bernstein, Arlington Heights, Mass.—p. 723.

Metrazol for Acute Alcoholism.—Orenstein and his collaborators treated two types of acute alcoholism with metrazol. One type consisted of a group of thirty-four patients who had a history and evidence of recent alcoholism and a clinical picture of acute disturbance, resistance and violence; the other group of sixteen patients had the same history as the first and deep coma or coma complicated by respiratory failure. Immediately after admission such patients were taken to the emergency room and were given intravenously 5 cc. of a 10 per cent solution of metrazol, the rate of injection being about thirty seconds for the 5 cc. This speed of injection failed to induce a general convulsion in the patients narcotized with alcohol. In some individuals, twitching of the face appeared. The authors refer to this dose and time factor as a "subconvulsive dose," that is the dose is large enough to stimulate the central nervous system notably but does not lead to a generalized seizure. Sedation and other treatment were ordered as indicated. A large number of the excited patients would quiet down in from two to ten minutes after the injection and no further special treatment would be necessary. Comatose patients frequently regained consciousness in from five to thirty minutes and were able to give an adequate admission history. Twenty-five of the thirty-four excited patients improved within twenty minutes after the injection of metrazol, that is the acute symptoms of excitement disappeared. Ten of the sixteen comatose patients improved within thirty minutes, that is they awakened within this time or there was a change in their respiratory function with a clearing of the cyanosis or other alarming signs.

Psychoses Associated with Epilepsy.—Clark and Lesko state that in one year twenty-two patients were admitted to the Boston Psychopathic Hospital because of psychoses associated with epileptic seizures not complicated by syphilis, brain tumor, recent head injury or other causes of extensive damage to the central nervous system. Fourteen of the patients had clouded states, three chronic psychoses, one deterioration with psychoses and one a severe behavior disorder, and three could not be classified. Their ages, on first becoming mentally ill, ranged from 12 to 49 years. In all a considerable interval (from two to forty-five years, average about fifteen years) elapsed between the onset of their seizures and their first attack of mental illness. Their family histories with one exception (a family history of epilepsy) were not remarkable. Only four other patients were known to have a parent with signs of nervous abnormality: two alcoholic, one depressed and one migrainous. Eleven patients had early cerebral damage although there were no residual neurologic signs. All patients had typical grand mal attacks without localizing features; five also had petit mal attacks. The frequency of seizures varied greatly, one patient having only nine observed seizures in the previous six years, another having grand mal attacks up to seven times daily. The average was about once a month. Patients with clouded states had the condition from about half a day to thirty-five days, with an average of four and a half days for twenty-one episodes. Usually these states were preceded by one or more grand mal seizures. All the patients with clouded states were overactive at some time (from mere restlessness to extreme combativeness and assaultiveness). Only two were stuporous for short periods. Speech and mood were variable. Delusions were manifested by twelve patients. Twelve had hallucinations, eleven of whom had delusions as well. Six had visions, including dead people, snakes, pigs, bugs, pigmy men and various living people. Seven had auditory hallucinations, including voices, music and the sound of airplanes. There were no olfactory, tactile or gustatory hallucinations. Of those who responded to questions, only two had unimpaired memories. The memories of others were better preserved for remote than for recent events. When orientation could be determined, it was poor in all but one case. Insight during attacks was absent in those with great overactivity and disturbed moods, while in calmer patients insight was partially present. The degree of amnesia for the attack after recovery was greatest when the most excitement prevailed during the psychosis and was least in the more elaborate, dreamlike states. The clouded states were comparable to alcoholic intoxication. The neuropathologic processes underlying these conditions are unknown. There is great need of research in this field.

American Journal of Public Health, New York

90: 1-118 (Jan.) 1940

The National Health Program: Present Status. A. Wolman, Baltimore.—p. 1.
The Physician's Part in Organized Medical Care. H. Emerson, New York.—p. 9.
Industrial Hygiene for the Smaller Plant. G. S. Everts, Philadelphia.—p. 17.
*Study of Deaths from Farm Accidents in Alabama. J. N. Baker, Montgomery, Ala.—p. 22.
School Health Education. W. H. Brown, Palo Alto, Calif.—p. 35.
Differentiation and Identification of Bacillary Incitants of Dysentery. M. B. Coleman, Albany, N. Y.—p. 39.
An Outbreak of Shiga Dysentery in Michigan, 1938. N. Berneta Block and W. Ferguson, Lansing, Mich.—p. 43.
Studies of Acute Diarrheal Diseases: III. Infections Due to the "Newcastle Dysentery Bacillus." A. V. Hardy, New York; J. Watt, Albany, Ga.; M. H. Kolodny, New York, and Thelma DeCapito, Albany, Ga.—p. 53.
Studies of Toxicity of Basic Fuchsin for Certain Bacteria. Cassandra Ritter, Lawrence, Kan.—p. 59.
The National Plumbing Laboratory. F. M. Dawson and A. A. Kalinske, Iowa City.—p. 66.
Comparative Efficiency of Endo, Lithium Chloride Endo, Desoxycholate Citrate and Bismuth Sulfite Mediums for Isolation of Eberthella Typhosa. Catherine R. Mayfield and Maud Gober, Jackson, Miss.—p. 69.
Studies on Typhus Vaccine Prepared from Agar-Tissue Culture. S. H. Zia, K. H. Pang and P. Y. Liu, Peking, China.—p. 77.

Deaths from Farm Accidents in Alabama.—Baker presents data secured through accident questionnaires collected over seven years (1932-1938) by the Bureau of Vital Statistics. Every certificate of death filed in the Bureau of Vital Statistics of the Alabama State Board of Health on which the medical certification gave an accidental cause of death was queried. Of 309 deaths from farm industrial accidents recorded 186 deaths were of white persons and 123 of Negroes. Only eighteen were women. Of the deaths 46 per cent occurred during the four summer months. About one third of the deaths occurred instantly; one half within twenty-four hours and 78 per cent within one week. The interval between the time of the accident and death ranged from instant death to a maximum of 932 days. Of all known farming activities, cutting and sawing lumber was recorded once for every five farm industrial deaths. In three out of four deaths from this activity a falling object was the destroying agent; 79 per cent of these objects were falling trees.

Caring for animals was the cause of thirty-seven deaths. Fourteen of these deaths involved mules and in ten instances the animal kicked its victim to death. Plowing was the third activity in importance, resulting in thirty-one deaths, ten of which were from being struck by lightning. Eight were attributed to sunstroke. Driving vehicles caused the death of twenty-two persons, three fourths of whom fell—fourteen from wagons and two from trucks. Clearing of land was the fifth activity of importance, resulting in seventeen deaths, more than three fourths of which were caused by burns. Of equal importance to the activity of clearing land was that of riding animals, which also resulted in seventeen deaths. Eleven of the deaths were caused by the rider becoming entangled in the harness and being dragged by mules. About one half of the deaths from riding animals were of young people (10 to 14 years of age). Almost all of the decedents in this category were less than 25 years of age. From 1933 to 1938 inclusive there were 1,594 lives sacrificed by accidents in farm homes (deaths of persons residing on farms but not gainfully employed at the time). Of these 960 were white persons and 634 were Negroes; 512 and 325 respectively were women. Only one fourth of the fatal home accidents occurred during the four summer months; 40 per cent of the home accidents occurred during four winter months (October-January). Just as in the case of farm industrial accidents, a large number of the decedents die shortly after the accident occurs. Playing comprised one out of five of all activities ending in death, and burns constituted the destructive agency in more than half of the deaths (115) which occurred while playing. Almost all of the victims were less than 5 years of age. Falls were the second most important agency of injury in the playing group. Of twenty-one gunshot deaths, fifteen were the result of some one playing other than the decedent. There were 185 deaths from accidents which occurred while walking. Falls accounted for 51.1 per cent of these deaths. Sleeping, the third most important (13.5 per cent) activity, was associated with 159 accidental deaths, 56 per cent of which were from suffocation. The agency of injury second in importance in this group was burns (burning buildings). Standing was associated with the death of 134 individuals. Standing before an open fire was the origin of fifty-nine of these deaths. Falls, the second agency of injury in importance, accounted for twenty-six deaths. Eating and drinking, the activity fifth in importance, terminated fatally for 120 persons, of which number ninety-five were attributed to poisoning. Food poisonings totaled forty-five. Of the fifty remaining deaths, twenty-three were from lye poisoning. Rat poison was charged with four deaths, kerosene with three. Twenty-four of the eating deaths were from suffocation, fourteen of which were caused by foreign bodies. Falls from the sitting position caused nineteen deaths. The taking of medicine resulted in twelve deaths. A "patent medicine" for the treatment of worms caused one death. In two instances oil of chenopodium was concerned. Forty-four fatalities were in homes in which the decedent lived alone or was alone at the time of the accident; sixteen were infants of 1 year or less; five infants crawled into open fires. Information on the prevention of farm accidents should be made available to all schools and to the farm group.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

24:1-132 (Jan.) 1940

Early Syphilitic Osteomyelitis: Report of Two Cases. U. J. Wile and D. G. Welton, Ann Arbor, Mich.—p. 1.
Lobelia as Sure Cure for Venereal Disease. Esther Louise Larsen, Washington, D. C.—p. 13.
*Menstrual Cycle and Blood Serologic Test for Syphilis. N. R. Ingraham Jr. and Verna R. Mayer, Philadelphia.—p. 23.
Wassermann Test: XVII. Effect of Antisyphilitic Drugs on Wassermann Reaction. D. L. Belding, Boston.—p. 29.
Gummatous Mastitis. A. L. Braunstein and R. D. Woolsey, Baltimore.—p. 43.
Use of Prontylin in Seroresistant Syphilis. H. Pariser, Philadelphia.—p. 48.
Exfoliative Cutis Medicamentosa: Report of Case Caused by Other Than Antisyphilitic Drug (Quinamphol). M. B. Sulzberger and R. L. Baer, New York.—p. 50.

Menstrual Cycle and Serologic Test for Syphilis.—The occasional clinical observation that an apparently false positive blood serologic test for syphilis can be obtained at about the time of menstruation has led Ingraham and Mayer to perform 292 separate tests on sixty-six specimens of blood obtained from seventeen healthy young women. The blood samples were studied on various days of the menstrual cycle. The results were uniformly negative throughout. The conclusion is that false positive serologic tests occurring during the menstrual cycle must result from a peculiarity of the individual or of the test and do not arise from any uniform blood changes occurring in all women. The incidence of occasional exceptional cases can be deduced only by studies of large groups of women.

Annals of Surgery, Philadelphia

111:1-160 (Jan.) 1940

*Vitamin C Studies on Surgical Patients. M. K. Bartlett, C. M. Jones and Anna E. Ryan, Boston.—p. 1.
Motor Functions of Stomach After Resection. S. P. Vitkin, Sverdlovsk, Soviet Union.—p. 27.
Subparietal Rupture of Intestine Due to Muscular Effort: Report of Two Cases. S. F. MacMillan, Schenectady, N. Y.—p. 49.
*Use of Sulfanilamide in Treatment of Peritonitis Associated with Appendicitis. I. S. Ravdin, J. E. Rhoads and J. S. Lockwood, Philadelphia.—p. 53.
Mikulicz Procedure, with Special Reference to Late Results in Management of Carcinoma of Colon. H. Patterson and A. Webb Jr., New York.—p. 64.
Adaptation of Mikulicz Operation for Right Colon and Rectosigmoid. R. F. Carter, L. R. Slattery and R. C. Hahn, New York.—p. 80.
Diagnostic Paracentesis in Suspected Intra-Abdominal Hemorrhage. C. C. Johnston, Lexington, Ky.—p. 93.
Rectal Malformation: Case Report. G. W. Ault, Washington, D. C.—p. 96.
Chronic Hypertension Produced by Carotid Sinus and Aortic-Depressor Nerve Section. S. J. G. Nowak, Boston.—p. 102.
Pheochromocytoma: Case Report. E. C. Baumgarten and M. O. Cantor, Detroit.—p. 112.
Modified Form of Lumbar Sympathectomy for Denervating Blood Vessels of Leg and Foot: Anatomic Considerations: Preliminary Report. L. N. Atlas, Cleveland.—p. 117.
*New Incision for Closed Space Infection (Felon) Involving Distal Phalanx of Finger. J. J. Weiner, New York.—p. 126.
Luxation of Extensor Tendons in Hand. F. H. Straus, Chicago.—p. 135.
Method for Continuous Spinal Anesthesia: Preliminary Report. W. T. Lemmon, Philadelphia.—p. 141.

Vitamin C and Surgery.—Bartlett and his associates determined the vitamin C content of the blood plasma of thirteen normal subjects and of 188 patients to be operated on. The thirteen control subjects showed a blood plasma content varying from 0.77 to 1.62 mg. per hundred cubic centimeters, with an average of 1.24 mg. Of the 188 patients on whom fasting determinations were made the average blood plasma level was 0.43 mg. per hundred cubic centimeters, with a variation from zero to 1.89 mg. As a concentration below 0.5 mg. per hundred cubic centimeters was obtained in 126 of the patients, this may be considered definitely abnormal with respect to their vitamin C metabolism. To determine whether the type of disease has a bearing on the degree of depletion the patients were divided into several groups, and also the vitamin C content, with its possible effect on the healing process, was determined postoperatively. The authors feel that the consistent fall in the plasma vitamin C observed after operation cannot be accounted for entirely on the basis of decrease in vitamin C intake. Most of the patients studied were allowed fluids by mouth, including fresh fruit juice, immediately after operation, so that an adequate supply of vitamin C was available throughout the postoperative interval. The drop in the plasma vitamin C in several instances was far too abrupt to be accounted for on the basis of starvation alone, even if the diet after operation contained no vitamin C. The changes in contour observed in the clearance curves after operation do not seem to be dependent on a decrease in vitamin C intake, the amount of parenteral fluid administered or the type of anesthesia. There is some evidence which suggests that the magnitude of the surgical procedure is related to the extent and duration of the postoperative alteration in the curves. The general preoperative nutritional state and especially the degree of vitamin C depletion seems to be another important factor. If the preoperative nutrition is good and the vitamin C is not depleted the more extensive surgical procedures cause a less marked change in the postoperative vitamin C clearance curves. A fall in the fasting plasma level of ascorbic acid occurs immediately after operation with a gradual return to the preoperative level, and when an intravenous dose of 1,000 mg. of ascorbic acid is given it is removed from the blood stream more rapidly than before operation, possibly because of an increased need for this substance during the process of tissue repair and wound healing. Depletion of vitamin C is found in patients with a variety of pathologic conditions.

Sulfanilamide for Appendical Peritonitis.—In 1936 Ravdin and his colleagues began to use sulfanilamide in spreading peritonitis associated with acute appendical infections and

also when it was feared that a spreading infection might develop. A compilation of the mortality figures in 809 consecutive cases of acute appendicitis shows that the mortality has been reduced from 1.5 per cent of the 552 patients operated on previous to the use of sulfanilamide to 0.4 per cent of the following 257. The improvement, they believe, can be attributed only to the employment of sulfanilamide, as no other known factor was changed. A number of patients with extensive peritoneal infection secondary to appendicitis recovered with much less reaction than would have been predicted on the basis of experience with the first 552 cases. All the available evidence indicates that the peritoneum is a favorable site for the action of sulfanilamide. It appears that the character of the lesion is more important than the specificity of the organism in determining the effectiveness of the drug. No instance of intestinal obstruction due to adhesions has been encountered since suction drainage of the stomach has been employed.

New Incision for Infections Involving Fingertips.—Weiner describes a new incision for closed space infections which appears to eliminate the objectionable features of other incisions. Under gas-oxygen anesthesia the nail is detached from the skin, nail bed and matrix. An inverted U shaped incision is made close to the tuft of the bone and part of the shaft of the distal phalanx. The perpendicular fibers are cut close to the bone. The pulp is retracted and the closed space is entered. The abscess (felon) is found lying just anterior to the distal phalanx. The mushroom portion of bone is carefully examined for evidences of osteomyelitis and if signs of softening are present the tuft is removed. The abscess cavity is emptied and the necrotic tissue in the anterior space, if present, is cut away and iodoform gauze is packed into the cavity. Wet dressings of boric acid are applied. The patient is instructed to soak the finger in hot boric acid solution every two hours for twenty minutes. The packing is removed in forty-eight hours. The author states that the advantages of the incision are that the bone is brought closer to the surface and less soft tissue has to be cut through, early osteomyelitis can be detected long before a roentgenogram reveals such destruction, adequate drainage is obtained, the wound heals in a shorter time, if a sequestrum forms it can be easily extruded, scarring is absent as the nail regenerates and covers the scar, and sensation is unimpaired.

Archives of Internal Medicine, Chicago

65: 1-220 (Jan.) 1940

*Treatment of Multiple Sclerosis with Nicotinic Acid and Vitamin B₁: Preliminary Report. M. T. Moore, Philadelphia.—p. 1.
Effect of Reticulocytogenic Principle in Urine in Treatment of Pernicious Anemia. G. E. Waberlin, Chicago.—p. 21.
Disseminated Lupus Erythematosus: Cutaneous Manifestation of Systemic Disease (Libman-Sacks): Report of Case. A. M. Ginzler and T. T. Pox, New York.—p. 26.
Primary Sarcoma of Pericardium: Report of Case. R. L. Parker, A. H. Baggenstoss and T. J. Dry, Rochester, Minn.—p. 51.
Evaluation of Therapy in Myasthenia Gravis. N. S. Schlesinger, Philadelphia.—p. 68.
*Atrophic Gastritis: Gastroscopic Studies on Effects of Liver and Iron Therapy: Preliminary Report. R. Schindler, J. B. Kirsner and W. L. Palmer, Chicago.—p. 78.
*Vitamin A Deficiency in Diabetes Mellitus. J. G. Brazer and A. C. Curtis, Ann Arbor, Mich.—p. 90.
Syndromes of Pseudohelminthic Palsy: Anatomic and Physiologic Analysis. O. R. Langworthy and F. H. Hesser, Baltimore.—p. 106.
Purpura Haemorrhagica Due to Ingestion of Sedormid (Allylisopropylacetylcarbamide): Experimental Observations and Report of Case. E. H. Falconer and I. C. Schumacher, San Francisco.—p. 122.
*Epidemic Disease of Respiratory Tract. H. A. Reimann and W. P. Havens, Philadelphia.—p. 138.
Effect of Renal Retention of Vitamin C on Saturation Tests: Formula for Compensation of This Factor of Error. J. B. Ludden and I. Wright, New York.—p. 151.
Fever in Congestive Heart Failure. Dera Kinsey and P. D. White, Boston.—p. 163.
Basal Secretion of Digestive Enzymes in Old Age. J. Meyer, E. Spier and F. Neuwelt, Chicago.—p. 171.
Clinical Studies in Circulatory Adjustments: VI. Physiologic Relation Between Posture and Cardiac Output. A. A. Goldbloom, M. L. Kramer and A. Lieberson, with technical assistance of F. K. Robt, New York.—p. 178.
Allergy: Review of Literature of 1939. F. M. Rackemann, Boston.—p. 185.

Nicotinic Acid and Vitamin B₁ for Multiple Sclerosis.—Moore reports five cases of advanced multiple sclerosis in which nicotinic acid therapy was used, in the first case on Feb. 15, 1938, and has been used almost continuously, with a few interruptions, until the time of writing. Until June 1938 the nicotinic acid was given intramuscularly (from 60 to 120 mg. in 10 cc. of sterile physiologic solution of sodium chloride) on alternate week days. After June 4, 1938, the drug was given intramuscularly exclusively, in doses varying from 80 to 140 mg., two or three times a week, depending on the patient's reaction. At this time the use of vitamin B_1 (thiamin chloride) was begun and 3.32 mg. (1,000 international units) was administered intravenously at the height of the cutaneous hyperemia. After July 18, 10 cc. of nicotinic acid and thiamin chloride combined in solution with sterile distilled water was injected intramuscularly into the buttocks, each cubic centimeter containing 12 mg. of nicotinic acid and 3.32 mg. of thiamin chloride. The solution was heated to about 110 F. and drawn into a warm syringe barrel immediately before injection; otherwise the characteristic flushing of the skin and body warmth did not occur. Prior to the use of nicotinic acid and vitamin B_1 the five patients received various treatments. Only hyperpyrexia appeared to produce a temporary improvement in most instances, except in case 5, in which the condition was made worse. The beneficial effects of vasodilatation and increased blood flow achieved by fever therapy and sympathectomy could be obtained with nicotinic acid without the dangers incident to these methods. Improvement followed the parenteral use of nicotinic acid and vitamin B_1 in the five cases of multiple sclerosis. Nicotinic acid produces vasodilatation and increased blood flow in the brain and spinal cord. The rise of cerebrospinal fluid pressure, as observed in cases 1 and 4, following the injection of nicotinic acid and, coming on coincidentally with the subjective feeling of warmth and the objective appearance of flushing of the skin, was presumptive evidence of vasodilatation within the brain. The exposed brain and cervicothoracic portion of the cord of the cat showed vasodilatation both visually and photographically after the intramuscular injection of nicotinic acid; this was most evident at the height of "pinking" of the cat's tongue and dental mucous membrane. When nicotinic acid-vitamin B_1 therapy was discontinued for any length of time, incapacitating spasticity and incoordination returned in every case. These symptoms were ameliorated within several days, or at most a fortnight, on restitution of treatment. To date untoward effects of prolonged treatment with nicotinic acid and vitamin B_1 have not been encountered, and laboratory and electrocardiographic studies have not shown evidence of harmful effects. Complete remissions have not been achieved. On the other hand, these cases were instances of advanced multiple sclerosis in which many forms of therapy had been used without appreciably arresting the progress of the disease. After treatment with nicotinic acid and thiamin chloride every patient noticed improvement in bodily movements and in walking: Patient 2 has been restored to her aptitude at the piano and has lost the annoying paresthesias. Patient 4 is now able to stand and has overcome much of his extreme spasticity. Patient 5 is no longer bedridden; he can move his legs and stand while assisted and use his arms, which were previously powerless, for purposes of dressing and eating. What effect nicotinic acid-vitamin B_1 therapy may have in cases of early multiple sclerosis is still to be determined.

Effect of Liver and Iron Therapy on Atrophic Gastritis.—Schindler and his associates employed substitution therapy (liver and iron) in eight cases of atrophic gastritis not associated with pernicious anemia, combined cord degeneration, sprue or pellagra. Only cases were chosen in which the gastroscopic appearance was marked and in which repeated gastroscopic examinations were possible. The developments in case 1, a case of untreated atrophic gastritis, are reported as control observations. Cases 2, 3 and 4 are instances of severe atrophic gastritis in which substitution therapy was unsuccessful. In cases 5, 6, 7 and 8 liver therapy led to the apparent regeneration of the gastric mucosa. In case 9 liver therapy was unsuccessful, while treatment with iron was followed by mucosal regeneration. In case 1, not treated by substitution therapy, gastroscopic check eight months after the initial gastroscopic examination showed no essential change in the mucosa, although clinical improvement occurred with a bland diet and sedatives. In case 5 spectacular improvement of extensive atrophic gastritis followed the first course of liver therapy, although slight areas of atrophy still were visible. The original picture reappeared after liver therapy was discontinued. There was no improvement after a second

course of therapy. Further study is required to evaluate its effectiveness. The case is of interest because free hydrochloric acid appeared after liver therapy, perhaps suggesting a true regeneration of functionally active glandular structures in the stomach, even though the improvement was temporary. Case 6 is the first instance of marked atrophic gastritis in which an apparent improvement was observed following liver therapy. The significance of the therapeutic result was further emphasized by the reappearance of the typical gastroscopic signs of atrophic gastritis after the patient discontinued treatment. Spontaneous improvement of severe atrophic gastritis was observed in case 7. Three gastroscopic examinations before the institution of liver therapy showed no improvement in this case and serve as control observations. The sudden disappearance of the atrophy following a brief period of liver therapy suggests a specific therapeutic result. A definite improvement of the atrophic gastritis in case 8 followed liver therapy. The case demonstrates that free hydrochloric acid may be present despite extensive atrophy of the gastric mucosa. In case 9 apparent healing of the atrophic gastritis associated with hypochromic anemia followed iron therapy. Apparent healing of atrophic gastritis following iron therapy has been described by Chevallier and Moutier and by Schiff and Goodman. This is the first case in which the authors have made the same observation. It is impossible at present to say whether or not the apparent regeneration of the gastric mucosa is genuine, i. e. due to the formation of new glands. Microscopic studies are necessary to solve this question. Substitution therapy, such as the administration of liver, iron or vitamins, is justified in the treatment of atrophic gastritis as an approach to clarifying the nature and pathogenesis of this condition. However, control studies, prolonged observation and competent interpretation of the changes are necessary before evaluation of such therapy is possible.

Vitamin A Deficiency in Diabetes Mellitus.—Brazer and Curtis observed twenty patients with juvenile diabetes mellitus and found that all of them had poor light adaptation by the Frober-Faybor biophotometer. Three of the group were subjectively aware of night blindness and nine showed cutaneous changes compatible with vitamin A deficiency. The daily administration of 60,000 U. S. P. units of vitamin A, in the form of crystalline carotene dissolved in vegetable oil, for as long as fourteen days did not affect the light adaptation of the patients. The daily administration of 60,000 U. S. P. units of vitamin A, in the form of concentrated fish liver oils, caused the patients' light adaptation to return to normal or nearly normal in from three to twenty-one days. The cause of poor light adaptation in patients with juvenile diabetes mellitus appears to be an inability to convert carotene to vitamin A.

Epidemic Disease of Respiratory Tract.—Reimann and Havens state that in the spring of 1938 eight cases of a severe form of atypical pneumonia were studied at the Jefferson Medical College Hospital; further cases occurred among the hospital personnel in August, November and December. Epidemics of similar disease were observed in Ohio, Delaware, Oregon, New York, Minnesota, Missouri and elsewhere. In January 1939 an epidemic of a mild disease of the respiratory tract began in Philadelphia, which reached widespread proportions in February. Similar outbreaks, with a high morbidity rate, were reported from New York, Minnesota, Illinois, England, France and elsewhere at about the same time. The authors limited their observations chiefly to the interns, nurses and medical students comprising a group of 813 persons, of whom 407 were ill presumably of the same disease. The authors believe that the incubation period is perhaps one or two days, but others have suggested that it is two weeks. The disease was primarily an inflammation of the mucous membranes of the respiratory tract, usually of the nose, pharynx and larynx, occasionally including the trachea and bronchi, and in a few cases the bronchioles and lungs. Constitutional symptoms were usually in proportion to the extent and intensity of the mucosal inflammation. The clinical course was remarkably uniform in most cases, differing chiefly in degree of severity. Nasopharyngolaryngitis was present in 88 per cent of the cases, tracheobronchitis in 6 per cent and tracheobronchopneumonia in addition in 6 per cent. In most of the cases of severe illness the lungs were presumably involved by the infectious agent suspected, without the agency of the usual varieties of bacteria. There were no serious complications, and all the patients recovered. The disease resembles epidemic influenza in many respects but is caused by a different agent. The disease should perhaps be given a temporary general name such as grip (as dissociated from true influenza) until the etiologic agent is discovered. Many features of the disease, such as its epidemiology, the close resemblance to other diseases known to be caused by filtrable viruses, the normal leukocyte count and the absence of evident causative bacteria, suggest to the authors that a filtrable virus is the cause.

California and Western Medicine, San Francisco

52: 1-50 (Jan.) 1940

National Department of Health Proposed in 1871 by Thomas M. Logan, M.D., of California. W. M. Dickie, San Francisco.—p. 6.
*Alcohol Tolerance: Its Importance in Relation to Chemical Tests for Drunkenness. H. W. Newman, San Francisco.—p. 9.
Alcoholism: Its Psychiatric Treatment. J. L. Henderson, Compton.—p. 11.
Malignant Melanoma: Statistical and Pathologic Review of Thirty-Five Cases. L. R. Taussig and Frances A. Torrey, San Francisco.—p. 15.
Endometrium in Menstrual Disturbances of Climacteric. Gertrude Flint Jones, San Francisco.—p. 18.
Spinal Anesthesia. L. L. Stanley, San Quentin.—p. 20.
Refrigerated Cartilage Isografts: Their Source, Storage and Use. G. B. O'Connor, San Francisco.—p. 21.
Quantitative Methods in Diagnosis of Brain Tumors. W. T. Grant, Los Angeles.—p. 23.
Venereal Lymphogranuloma: Public Health Aspects. J. C. Geiger and C. Matherson Jr., San Francisco.—p. 25.
Benjamin Franklin Keene. G. P. Jones, San Francisco.—p. 27.

Alcohol Tolerance.—Newman has endeavored to determine whether there is enough individual tolerance to alcohol to affect the validity of blood-alcohol concentration tests. Accepting as a hypothesis that acquired tolerance did occur, the mechanism which might bring it about was determined. A series of dogs was given a test dose of alcohol—first gastrically and after an interval of a few days intravenously. A period of thirteen months was then allowed to elapse, during which time the animals had as their only supply of fluid a 10 per cent solution of alcohol. They drank daily on an average about 7 cc. of alcohol per kilogram of body weight; the equivalent for a man of average weight would be about a quart of whisky daily. At the end of this time the test dose of alcohol was repeated and the curves of blood-alcohol concentration were found to coincide with those obtained before habituation. It is concluded that any tolerance developed by the dogs was not due to either decreased absorption or increased rate of metabolism of alcohol. To determine if tolerance actually did develop with habituation a fresh group of animals was subjected to the test dose of alcohol and not only the blood-alcohol concentration but also the neuromuscular behavior was observed during the period of intoxication. This was judged in nine purely arbitrary degrees. There was a certain divergence in the behavior of the individual dogs at the same blood-alcohol levels, indicating some degree of difference in inherent tolerance to alcohol. The period of habituation was then begun. It had previously been observed that the animals, when given free access to the alcohol solution during the twenty-four hours of the day, soon learned to drink only a little at a time and so never became very drunk. This was remedied by placing the alcohol solution in the cages for only a short period twice a day, with the result that the dogs became very drunk twice a day, while imbibing almost the same daily dose as the previous group. At the end of ninety-seven days they were subjected to the same procedure after the test dose as before. The rate of alcohol metabolism did not show a significant variation from that shown before habituation, but the degree of drunkenness at a given blood-alcohol level showed a consistent and marked decrease after habituation. The results between the abstinent and habituated animals indicate a clearcut acquired tolerance of all animals. That this tolerance is not permanent was demonstrated by its loss after seven months of abstinence. Thus, it is demonstrated that not only do dogs show an individual variation in tolerance to alcohol but the tolerance can be increased by habituation and again decreased after abstinence. If these results with dogs could be applied to the same problem in man, it is apparent that the same blood-alcohol concentration need not indicate the same degree of intoxication in one individual as in another, or even in the same individual should he change his drinking habits.

Endocrinology, Los Angeles

30: 1-188 (Jan.) 1940. Partial Index

*Acromegaly and Diabetes Mellitus. C. Coggeshall and H. F. Root, Boston.—p. 1.
*Comparative Study of Metabolic Effects of Testosterone Propionate in Normal Men and Women and in Eunuchoidism. A. T. Kenyon, Kathryn Knowlton, Irene Sandiford, F. C. Koch and Gertrude Lotwin, Chicago.—p. 26.
*Observations on Continued Use of Male Sex Hormone Over Long Periods of Time. J. Eidelsberg and E. A. Ornstein, New York.—p. 46.
*Mechanism of Estrin Therapy in Relief of Dysmenorrhea. S. H. Sturgis and F. Albright, Boston.—p. 68.
Relation of Hyperemia to Action of Estrin. O. Hechter, M. Lev and S. Soskin, Chicago.—p. 73.
Potency of Certain Commercial Hormone Preparations: Second Study. F. E. D'Amour, Denver.—p. 88.
Biologic Potency of International Standard Chorionic Gonadotropin. F. E. D'Amour and Marie C. D'Amour, Denver.—p. 93.
Relationship Between Thymus and Sexual Organs. H. Chiodi, Buenos Aires, Argentina.—p. 107.
Output of Protein Metabolism Hormone of Pituitary Anterior Lobe. K. E. Paschkis, Philadelphia, and Annie Schwoner, Vienna, Germany. —p. 117.
Autonomic Control of Thyroid Secretion. H. B. Friedgood and W. B. Cannon, Boston.—p. 142.

Acromegaly and Diabetes Mellitus.—Coggeshall and Root discuss the occurrence of twenty-six cases of diabetes among 153 acromegalic patients, evidences of hyperpituitarism with excessive height in three patients among diabetic patients, three frank cases of acromegaly and three of gigantism. The average interval between the onset of acromegaly in the twenty-six diabetic and the three patients with hyperthyroidism and that of diabetes was 9.2 years. A constitutional or hereditary predisposition to diabetes encountered in acromegaly is suggested by the existence of hereditary or familial diabetes in six of the twenty-nine cases, or 21 per cent, whereas among the relatives of the 127 cases of acromegaly without known diabetes only 2 per cent had diabetes. The obesity of 113 patients with acromegaly resembled that of diabetic patients in that 73 per cent of the acromegalic patients had been from 10 to 70 per cent above standard weight. Absence of the specific dynamic action of protein was observed in one case of acute hyperpituitarism at the beginning of a period of diabetic treatment; a subsequent test after treatment showed a normal specific dynamic action. During this period the basal metabolism fell from +34 to +1 per cent. Comparison was made of the weights of organs at necropsy between groups of patients with acromegaly, diabetes, combined acromegaly and diabetes and Simmonds' disease. Splanchnomegaly occurred only in the presence of acromegaly. Its absence in cases of ordinary diabetes argues against the possibility that persistent hyperpituitarism caused the diabetes. The possibility that a brief period of acute hyperpituitarism could produce permanent damage to the islands of Langerhans without splanchnomegaly remains. However, diabetes did not develop in four cases of fugitive acromegaly due to mixed tumors of the pituitary. At necropsy of fifty diabetic patients variations in the size of the pancreas were not associated with variations in the weight of other internal organs, such as was shown at necropsies of patients with acromegaly and Simmonds' disease. The clinical character of the diabetes associated with acromegaly does not show any greater variation in severity, resistance to insulin and duration of life than is seen in a large group of diabetic patients without acromegaly. An inconsistency between a blood sugar curve indicating insulin insensitivity and the fact that the patient had repeated insulin reactions was observed. The usual complications of diabetes including pyogenic infections, arteriosclerosis with gangrene and coronary atherosclerosis occurred. Coma may develop in cases of acromegaly with diabetes and therefore the same careful adjustment of diet and insulin is required as in cases of diabetes of similar severity without acromegaly. In certain mild cases of acromegaly and diabetes excessive polyphagia without loss of weight or development of acidosis resembled the diabetes produced by Young by the injection of anterior pituitary extract. His demonstration that degeneration of the islands of Langerhans and chronic diabetes can be produced in the dog by injection of large amounts of crude anterior pituitary extract of the cow provides a new method of studying the possible production of such changes in the human being with diabetes by such a diabetogenic substance.

Metabolic Effects of Testosterone Propionate.—Kenyon and his co-workers report further studies on the metabolic effects of testosterone propionate on eunuchoidism and compare these effects with those obtained in two normal men and two normal women. The effect of testosterone by inunction on a eunuchoid was also studied. The results confirm their previous observations: that intramuscular injection, once or twice a day, of 25 mg. of testosterone propionate to a eunuchoid reduced the urinary excretion of nitrogen, sodium, potassium and chloride. A gain in weight was observed, due largely to water held in association with the salts and protein retained. A reduction in the urinary excretion of inorganic phosphorus accompanied that of the other constituents. During recovery sodium, chloride and water were rapidly lost from the body, inorganic phosphorus and potassium less rapidly and less completely, while stored nitrogen was retained in great part for weeks. The two normal young men responded like the eunuchoids, except that the 0.03 Gm. of nitrogen retained daily per kilogram of weight, during the period of maximal effect, was half that of the eunuchoids. One normal young woman responded essentially as the eunuchoids and the normal men. The other woman showed a definite reduction in the urinary excretion of inorganic phosphorus but otherwise distinctly less evidence of a testosterone propionate effect. The reasons for the differences between the women are not clear. The concentrations of urea and nonprotein nitrogen of the blood were definitely reduced by such treatment, while those of hemoglobin, plasma proteins and serum sodium, potassium and chloride were unaffected. The reductions in urinary electrolyte excretion in the eunuchoid were unaccompanied by changes in urinary ammonia, hydrogen ion concentration, bicarbonate or concentration of titratable acid. Creatine excretion in the eunuchoid, intensified by ingestion of creatine, was substantially reduced by the androgen and increased during recovery. The daily percutaneous administration of 25 and 50 mg. of testosterone ointment to a eunuchoid produced diminution in the urinary excretion of nitrogen. The basal metabolic rate, fasting respiratory quotient, pulse rate and blood pressure of the normal subjects were not conspicuously affected by testosterone propionate. The basal metabolic rate of the eunuchoid was probably slightly increased; the pulse rate and blood pressure were unaffected. The 102.7 to 252.2 Gm. of protein estimated as retained by these subjects is not accounted for by increases in the bulk of genital tissues and represents deposit of new material elsewhere in the body. This together with the reduction in the urinary excretion of inorganic phosphorus, potassium and creatine points to a somatotropic influence of androgens and provides a clue to the explanation of unusual body growth accompanying precocious puberty.

Continued Use of Testosterone Propionate.—Eidelsberg and Ornstein cite the effects of the continued administration of testosterone propionate to four hypogonad males. On several occasions the erections have been too numerous and libido too pronounced. However, decreasing the dose or frequency of injection soon overcame this. Symptoms and signs of masculinity have been proportionately improved. Improvement in general well being and strength was most marked. The mental response and improvement in outlook were excellent. It is the authors' impression after using about 20,000 mg. of the preparation for the four subjects that as yet no real dangers have made their appearance. Several patients have been administering the material to themselves for about one year. It appears that the average weekly maintenance dose may be between 50 and 75 mg., sometimes more or less. The required dose apparently will vary from one patient to another. It seems that the response of the patients with simpler involvement, such as castrates or eunuchs, who were more or less normal originally, may be better than that of other patients, especially if treatment is not delayed too long after the pathologic condition appears. Patients with pituitary disorder (hypopituitarism, infantilism, Lorain-Levi syndrome, Fröhlich's syndrome) will respond better than the older patients from 20 to 30 or more years of age. Occasionally treatment may be discontinued without regression, but usually it must be continued, just as with other endocrine replacement therapy. The potential dangers of unrestricted sale and consequent indiscriminate use become apparent to all interested in the problem. Three of the four patients have since been subjected to subcutaneous implantation of pure testosterone tablets. In each instance the full and dramatic effects of the testosterone propionate, as evidenced by the previous injections, were maintained.

Estrogen and Dysmenorrhea.—Sturgis and Albright used estradiol benzoate (progynon B), 1 cc. of which contained 1.7 mg. (10,000 rat units) of the substance, in the treatment of twenty-five cases of severe dysmenorrhea. The dose was injected intramuscularly every third day. A course of treatment consisted of from three to fourteen injections. The immediate result of a series of such injections depended entirely on how soon in the menstrual cycle the injections were started. If the first of a series of from six to ten or twelve injections was given within the first week after the onset of the menses, the next period was invariably free from uterine cramps. If the series was not started until two weeks after the onset of the previous flow, there was no change in the pains during the subsequent menstruation. Although a completely cramp-free period followed a course of treatment if started early enough in the cycle, the next menses, when no estrogen had been given, was as painful as ever. Endometrial biopsies have furnished evidence that the immediate relief from estrogen treatment depends on the suppression of ovulation. Every biopsy of material taken before a painful period showed evidence of ovulation, whereas every biopsy obtained after treatment and before a period free from cramps showed no evidence of ovulation. When it was possible to take biopsies for three consecutive months it was shown that estrogen treatment for one month did not inhibit or repress ovulation during the next month. Over a period of from six to eighteen months eighty-two courses of injections have been given. In sixty-three of the periods directly following such treatment the patients were free from cramps. An analysis of the nineteen failures shows that in seventeen the injections were not properly timed for the individual case, the number of injections was insufficient or that treatment was given for two consecutive months. A few of the patients studied who have received estrogen on alternate months for at least a year have appeared to show a gradual improvement in the severity of the cramps in the months when no injections were given. It is too early to come to conclusions concerning the permanent value of this therapy. It seems probable that in some of these cases sufficient uterine growth can be produced to result in permanent mitigation of the pain.

Journal of Clinical Investigation, New York

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Serum Phosphatase in Lymphomatoid Diseases. H. Q. Woodard and L. F. Craver, New York.—p. 1.
Precipitin Studies in Nephrosis and Nephritis. E. Goettsch and J. D. Lyttle, New York.—p. 9.
Nature of Peripheral Resistance in Arterial Hypertension. E. A. Stead Jr. and P. Kunkel, Boston.—p. 25.
*Circulation in Athletes. H. J. Stewart and R. F. Watson, New York. —p. 35.
Serum Lipoids and Proteins in Hyperthyroidism. E. B. Man, E. F. Gildea and J. P. Peters, New Haven, Conn.—p. 43.
*Decrease of Gastric Secretion with Advancing Years: Further Observations. A. L. Bloomfield, San Francisco.—p. 61.
Antistreptolysin Titer in Rheumatic Fever, Arthritis and Other Diseases. J. J. Bunim and C. McEwen, New York.—p. 75.
Control of Dosage of Antiserum in Treatment of Pneumococcic Pneumonia: I. Study of Mechanism of Skin Reaction to Type Specific Polysaccharide. W. B. Wood Jr., Baltimore.—p. 95.
*Id.: Clinical Application of the Francis Skin Test. W. B. Wood Jr., Baltimore.—p. 105.
Effect of Disease of Liver and Biliary Tract on Phosphatase Activity of Serum. A. B. Gutman, K. P. Olson, Ethel Benedict Gutman and C. A. Flood, New York.—p. 129.
Metabolic Disturbances in Experimental Human Vitamin B Deficiency. K. O. Elsom, F. D. W. Lukens, Esther H. Montgomery and L. Jonas, Philadelphia.—p. 153.
Studies on Action of Sulfapyridine on Pneumococci. W. C. Spring Jr., F. C. Lowell and M. Finland, Boston.—p. 163.
Immunologic Studies on Patients with Pneumococcic Pneumonia Treated with Sulfapyridine. M. Finland, W. C. Spring Jr. and F. C. Lowell, Boston.—p. 179.
Bactericidal Action of Sodium Sulfapyridine and of Glucose-Sulfapyridine Solution in Human Blood. F. C. Lowell, W. C. Spring Jr. and M. Finland, Boston.—p. 215.
Renal Function and Anotmia Following Hematemesis. R. J. Stevens, I. Schiff, Anna Lublin and Ellen S. Garber, Cincinnati.—p. 233.
Immunity in Diabetes: III. Relation of Tissue Glycogen and Blood Chemistry to Bacterial Dissemination, Antibody Formation and Survival After Infection in Diabetes. R. Richardson, Philadelphia.—p. 239.

Circulation in Athletes.—Stewart and Watson studied the circulation of college athletes between 19 and 23 years of age and compared them with those of eleven normal individuals from 19 to 29 years of age engaged in ordinary sedentary occupations. Measurements were made of the arteriovenous oxygen differences, oxygen consumption, minute volume output of the heart, vital capacity, cardiac size, circulation time, venous pressure, arterial pressure and heart rate. The results of the study show that, with one exception, there was no significant difference between the measurements of college athletes and those derived from the control group. The stroke volume of the athletes was slightly larger. This difference appears to be related to body size, since the stroke volume per kilogram of body weight and the cardiac index for the two groups are approximately the same.

Decrease of Gastric Secretion with Advancing Years.—To determine whether a gradual decline of secretion takes place in every one or whether some people undergo an abrupt defection while others preserve their gastric juice unchanged into old age, Bloomfield reexamined five normal persons whose gastric secretions were determined more than ten years before. At the reexamination three of the five subjects showed practically identical gastric secretion, one showed slight decline of acidity but not of volume of secretion and one showed a definite decline both of volume and of acid. Why some normal people preserve their gastric secretion unaltered over many years while others show a rapid decline is obscure.

Value of Francis Skin Test in Pneumonia.—Wood treated fifty-one patients with lobar pneumonia caused by type I, II, III, IV, V, VII and VIII pneumococci with antipneumococcus serum and he controlled the dosage of the antibody administered by frequent skin tests with the homologous pneumococcus polysaccharide (Francis skin test). Five patients reacted to the polysaccharide before antiserum had been given. In none of these cases could the Francis skin test be used as a guide to serum therapy. The amount of antibody required to control the pneumonia in the cases studied varied from 11,000 to 1,983,000 units. The author asserts that the use of the test made it possible to treat each patient intensively without wasting antiserum. In every case in which a crisis occurred the Francis skin reaction became positive several hours before or during the fall in temperature. The skin test served as a valuable aid in the early diagnosis of the complications of pneumonia. In every case in which fever persisted in the presence of a positive skin reaction pleurisy with effusion, empyema, meningitis or endocarditis was demonstrated subsequently. No patient survived the pneumonia if a positive reaction failed to develop. Three patients who died reacted positively shortly before death; two died of pneumococcic complications and the third died of uremia, no evidence of active pneumonia being found at necropsy. The Francis skin test was found of value also in determining the optimal dosage of antibody in the treatment of patients who had previously received sulfapyridine.

Journal Industrial Hygiene & Toxicology, Baltimore

22: 1-52 (Jan.) 1940

*Prevention of Silicosis: Experimental Investigations on Action of Certain Nonsiliceous Dusts and Silica in Origin and Development of Silicosis. C. Naeslund, Stockholm, Sweden.—p. 1.
Percentage of Particles of Different Sizes Removed from Dust-Laden Air by Breathing. A. M. van Wijk and H. S. Patterson, Johannesburg, South Africa.—p. 31.
Studies on Detoxication Mechanism: I. Ability of Apple or Its Constituents to Counteract Toxic Effects of Lead and Arsenic. I. A. Manville, F. J. Reithel, P. M. Yamada, T. W. Spencer and J. R. Richardson, Portland, Ore.—p. 36.

Prevention of Silicosis.—From his experimental studies as to the prevention of silicosis, Naeslund concludes that: Chemically indifferent dusts such as coal (and even glass) did not bring about any obvious effect on the development of silicotic processes either inhibitive or in any promotive respect (through the enhancement of lymph stasis and the increase of cell aggregations in the silicotic areas). Silicosis and anthracosis appear to develop in the lungs (and lymph glands) quite independently and with no sign of any significant mutual collaboration between the reaction produced by silica and coal (anthracosilicosis). Inhaling alkaline dusts whose main effect presumably consists in a capacity to increase the solubility of silica in the lungs (soda and calcium hydroxide) without silica often caused irritations in the lungs and necrosis with inconsiderable fibrotic response. Similar changes took place after inhalation of these dusts together with silica but there were no direct signs of enhanced toxicity of the silicon in the lungs because these alka-

line dusts were present. These animals manifested great susceptibility to pulmonary infections which, in early stages, led to death in the silicotic animals. This observation can possibly partly explain certain cases of death from "acute silicosis" among human beings who have inhaled quartz along with alkaline dusts. There was no support to the theory of increased solubility and enhanced toxicity of quartz by the simultaneous inhalation of alkaline dusts. Among dusts which may diminish the toxicity of silica are the positively charged metallic dusts. Of particular interest in this connection is metallic aluminum, which was shown to inhibit the effect of quartz dust. In contrast to the investigations of Robson, Irwin and Denny, complete protection against proliferative fibrosis due to silica was not obtained through the inhalation of metallic aluminum dust. However, it is yet too early to judge whether experimental results will hold good for human beings. Iron and magnesium dust also proved to possess a certain, if slight, inhibitory effect on silica. This effect is not without practical significance, especially in mining where mixed dusts are encountered. Greater attention should be given to the composition of inhaled dusts and to the combined effect of the separate products, as siliceous industrial dust is often mixed. Especially is this advisable when silicosis manifests divergence from what might be reasonably expected.

Laryngoscope, St. Louis

49: 1151-1236 (Dec.) 1939

Abstracts from Literature Relating to Conditions in Trachea and Bronchi. C. J. Imperatori, New York.—p. 1151.
Peroral Endoscopy: Inception and Development of Peroral Endoscopy. M. C. Myerson, New York.—p. 1160.
Id.: Anesthesia. R. L. Moorhead, Brooklyn.—p. 1162.
Id.: Management of Bronchoscopic Clinic. D. H. Jones, New York.—p. 1165.
Id.: Indications for Direct Laryngoscopy and Bronchoscopy. R. Kramer, New York.—p. 1168.
Id.: Indications for Esophagoscopy, Gastroscopy and Duodenoscopy. C. J. Imperatori, New York.—p. 1178.
Id.: Contraindications to Endoscopy and Accidents. J. D. Kernan, New York.—p. 1184.
Id.: Single and Biplane Fluoroscopy. F. M. Law, New York.—p. 1189.
Id.: Pneumonography: Technic and Interpretation. G. B. Brighton, New York.—p. 1192.
Pathogenesis of Otosclerosis. W. Sparer, New York.—p. 1199.
Post-Tonsillitic Deep Cervical Abscess and Internal Jugular Vein Thrombophlebitis: Report of Six Cases. P. Leibowitz and S. Weinstein, Brooklyn.—p. 1205.
Psychogenic Impediments of the Voice. E. Froeschels, St. Louis.—p. 1225.

Nebraska State Medical Journal, Lincoln

25: 1-40 (Jan.) 1940

*Advances in Treatment of Dementia Paralytica by Combined Artificial Fever and Chemotherapy: Comparative Results in Early and Advanced Stages, Including Malarial Failures: Preliminary Report of Seventy Cases. A. E. Bennett, Omaha; J. C. Nielsen, Hastings, and A. H. Fechner, Lincoln.—p. 1.
Present Day Treatment of Pneumonia. E. M. Walsh, Omaha.—p. 6.
Sulfanilamide and Allied Azo Dyes in Treatment of Pneumonia. L. T. Hall, Omaha.—p. 12.
Why "Mary's Never Been the Same Since Johnnie Was Born." E. C. Sage, Omaha.—p. 15.
Genito-Urinary Diseases in General Practice. J. D. Bradley, Pender.—p. 17.

Artificial Fever and Chemotherapy for Dementia Paralytica.—In comparing the clinical remission rate of dementia paralytica following the various types of treatment, Bennett and his colleagues find that 12 per cent of patients obtained clinical remissions after chemotherapy (tryparsamide) alone, 42 per cent from malarial fever followed by chemotherapy and 53 per cent from combined artificial fever and chemotherapy. Of twenty patients with early dementia paralytica, a full remission was obtained in 65 per cent with partial improvement in 30 per cent. Complete serologic reversal of the spinal fluid was obtained in 40 per cent, with partial reversal in 30 per cent after combined artificial fever and chemotherapy. Of ten patients with dementia paralytica with tabes a full remission was obtained in 50 per cent and a partial one in 30 per cent. The spinal fluid was reversed completely in 40 per cent and partially reversed in 10 per cent. Of twenty-eight patients with advanced dementia paralytica committed to a state hospital, 54 per cent obtained a full clinical remission and 28 per cent a partial remission. A complete serologic reversal of the spinal fluid occurred in 28 per cent and a partial reversal in 50 per cent. Of twelve patients failing to obtain a full remission from malarial inoculation, 33⅓ per cent obtained a full remission and an additional 25 per cent were improved following fever and chemotherapy. The spinal fluid was reversed to negative in 33 per cent and improved in 41 per cent. The results from artificial fever, fifty hours above 105 F., combined with mapharsen in the entire group of seventy cases of all stages of dementia paralytica, were full remissions of 53 per cent with an additional 28 per cent improved. A complete serologic reversal of the spinal fluid occurred in 34 per cent, with partial reversal in an additional 37 per cent.

New England Journal of Medicine, Boston

221: 1003-1044 (Dec. 28) 1939

Empyema in Children. T. H. Lanman and H. L. Heyl, Boston.—p. 1003.
Rouleau Formation in Fresh, Unmodified Blood as Diagnostic Test for Hemolytic Anemia. W. Dameshek, Boston.—p. 1009.
Syndrome of Diabetes Mellitus, Hypertension and Nephrosis: Clinical and Pathologic Study of Case. M. A. Derow, M. D. Altschule and M. J. Schlesinger, Boston.—p. 1012.
*Effect of Amphetamine (Benzedrine) Sulfate and Paredrine Hydrobromide on Sodium Amytal Narcosis. A. Myerson, J. Loman, M. Rinkel and M. F. Lesses, Boston.—p. 1015.
Clinical and Clinical Diagnosis of Acute Alcoholism. W. W. Jetter, Taunton, Mass.—p. 1019.
Current Epidemiologic Aspects of Scarlet Fever. J. E. Gordon, Boston.—p. 1024.

Effect of Amphetamine Sulfate on Sodium Amytal Narcosis.—Myerson and his associates say that in a previous study on the physiologic effects of amphetamine (benzedrine) sulfate they noted that the duration of the narcosis produced by the intravenous administration of sodium amytal was shortened if a subcutaneous injection of amphetamine was given either before or after the sodium amytal. Since then they have studied the effect of the drug given by the intravenous route, thinking that it would be even more effective in counteracting the narcotic effects of sodium amytal. This paper records the quantitative effects of amphetamine sulfate as well as of paredrine hydrobromide, another sympathetic mimetic amine, on the narcosis produced by sodium amytal. They find that amphetamine sulfate is effective in preventing or counteracting the narcosis produced by the intravenous administration of sodium amytal. This action and the fact that amphetamine causes a rapid and prolonged rise in blood pressure may be found useful in certain cases in which it seems desirable to overcome severe side reactions of the narcosis produced by the barbiturates, particularly respiratory embarrassment and pronounced decrease in blood pressure. Paredrine hydrobromide, although closely related to amphetamine, appears to have no effect on the narcosis produced by sodium amytal.

222: 1-40 (Jan. 4) 1940

The Turn of the Century—and After. D. Cheever, Boston.—p. 1.
Intra-Abdominal Torsion of Appendices Epiploicae. R. E. Mabrey, Boston.—p. 12.
*Lung Abscess. D. D. Matson, Boston.—p. 15.
The Leukemias. H. Jackson Jr., Boston.—p. 22.

Lung Abscess.—Matson concludes that the majority of nontuberculous pulmonary abscesses follow procedures of the upper respiratory tract or develop subsequent to unresolved pneumonia or other severe infections of the upper respiratory tract. A primary pulmonary lesion is apparently present before secondary infection with mouth organisms takes place; this may be infarction as a result of embolism or atelectasis as a result of bronchostenosis or bronchiolar obstruction. There is no single bacteriologic etiology. The flora of the full-blown abscess is usually complex, and the quantitative importance and possible synergism of the various organisms are not understood. Oral infection is disproportionately common among adult patients with lung abscess of unknown etiology. This type of abscess is rare in infants and children. The diagnosis of lung abscess usually is readily made from the history and general clinical picture, aided by roentgenography and bronchoscopy. The results of physical examination of the chest may be variable and inconclusive. Accurate localization is the most important prerequisite to both medical and surgical treatment. From 20 to 30 per cent of the cases heal with only supportive treatment, and all cases should receive an adequate trial of medical therapy, of which the most important feature is supervised postural drainage. Collapse therapy, either by pneumothorax or by more extensive operative procedures, should never be attempted unless

the abscess cavity has been adequately drained. In peripheral abscess with reaction of the overlying pleura, early external drainage seems to be indicated. In abscesses which fail to respond to medical therapy in two or three months, especially in children whose general condition is good, such radical surgery as lobectomy deserves early consideration in order to avoid progression to chronic pulmonary suppuration and gangrene. The prophylaxis of lung abscess includes careful operative technic, caution in operating on patients with any predisposition to atelectasis, close observance of lung ventilation during and after operation, and conservative surgery on the upper respiratory tract with the use, if possible, of local anesthesia, improved oral hygiene and adequate therapy of respiratory infection in the early stages.

Ohio State Medical Journal, Columbus

36: 1-120 (Jan.) 1940

Medical Complications of Pregnancy. W. W. Herrick, New York.—p. 17.
Treatment of Gonorrheal Arthritis. R. M. Stecher and W. M. Solomon, Cleveland.—p. 24.
Hyperinsulinism Due to Adenoma of Pancreas: Fatal Outcome Due to Myocardial Failure: Autopsy Report. L. G. Heyn and L. Sommer, Cincinnati.—p. 27.
Combined Spinal Inhalation Anesthesia. B. B. Sankey and J. K. Potter, East Cleveland.—p. 29.
Some Physiologic Considerations of Heart Failure. R. C. Kirk, Columbus.—p. 31.
Early Forms of Neurosyphilis. J. L. Petterman, Cleveland.—p. 35.
Artificial Fever Treatment in Infants and Children: Methods, Indications and Results. W. Heymann, Cleveland, and Lena S. Enright, Findlay.—p. 40.
Relation of Thyroid Gland to the Total Man. D. M. Palmer, Columbus.—p. 44.
*Acne Vulgaris: Therapeutic Survey. I. L. Schonberg, Cleveland.—p. 50.
Trichinosis: Incidence in Dayton, Ohio. M. Oosting, Galveston, Texas.—p. 53.
*Use of Histaminase in Treatment of Various Allergic Manifestations. J. Forman, Columbus.—p. 56.
Present Status of Tetanus Toxoid and Its Use in Immunizing Serum Sensitive Individuals. G. E. Rockwell, Cincinnati.—p. 59.

Acne Vulgaris.—Schonberg tabulated the results obtained in 216 cases of acne vulgaris by various methods of treatment. The ages of the patients varied between 12 and 35 years. Questionnaires were sent to many of the patients, and others were seen at the office at intervals of six months after cessation of active treatment. As most recurrences took place from six to twelve months following treatment, a period of fifteen months was the accepted interval to determine the outcome of each case. All patients were treated by indicated local applications before other therapeutic methods were instituted. If no improvement occurred after from four to twelve weeks of local therapy, other methods were employed. Local applications, vaccines and ultraviolet radiation were used for patients less than 16 years of age. Patients selected for roentgen therapy were those with the pustular, large papular and indurated types of acne which had persisted over a long period without improvement under the usual methods of treatment. It was necessary to employ roentgen therapy for 122 patients. The remaining ninety-four were given local therapy and indicated types of internal therapy. These included juvenile acne, seborrheic acne and mild papular acne. Of these, 50 per cent obtained satisfactory results after from one to twelve months of treatment; there were 27 per cent of recurrences from six to twelve months after treatment and these have recently been given roentgen therapy. Seborrheic acne was recalcitrant to roentgen therapy. Patients from 12 to 14 years of age with juvenile acne were resistant to all types of therapy, and methods were used to control rather than to cure the condition. Endocrine preparations were used for twelve patients, and four obtained satisfactory results. In these cases there was evidence of endocrine dysfunction. Of the 122 patients given roentgen therapy eighty-five obtained satisfactory results, thirty-two were improved, five experienced no benefit and fifteen had recurrences. Recurrences following roentgen therapy were due to dietary indiscretions, pregnancy, gastrointestinal disturbances, foci of infection, failure to use astringent preparations for the prescribed periods and sunburn. Roentgen therapy should be preceded by a preparatory course of local therapy for six weeks and if no noticeable improvement occurs roentgen therapy should be instituted. This does not include individuals less than 16 years of age. Temporizing with local measures in recalcitrant cases increases scarring.

Histaminase for Allergic Manifestations.—Forman reports his results with the use of histaminase in the treatment of various allergic manifestations. Enteric coated capsules of histaminase each containing five units of the neutralizing substance were given orally. He finds that histaminase offers a helpful approach to the treatment of urticaria, angioneurotic edema, atopic dermatitis and acute allergic coryza. His results in asthma, contact dermatitis and other allergic conditions were much less satisfactory. It is quite possible that this is a matter of dosage. There were no side effects. Histamine injections and histaminase by mouth are interchangeable in the treatment of allergic manifestations in the skin. In most instances the capsules (one tablet two or three times a day until symptoms disappear) will be more convenient. This preliminary study will have to be extended before conclusions can be reached but the outlook seems most hopeful.

Philippine Islands Med. Association Journal, Manila

19: 653-726 (Nov.) 1939

Twenty Thousand Cases of Appendicitis. J. J. Estrada and S. C. Mefies, Manila.—p. 653.
Comparative Analysis of Different Brands of Imported Canned Milk. P. I. de Jesus and R. Lim, Manila.—p. 667.
Influence of Altitude and External Temperature on Blood Pressure. F. T. Roque, Baguio.—p. 677.
Autohemotherapy in Glaucoma. V. Delfin, Manila.—p. 683.

Public Health Reports, Washington, D. C.

54: 2239-2268 (Dec. 22) 1939

Relation Between Trypanocidal and Spirocheticidal Activities of Neoarsphenamine: V. Spirocheticidal Activity of Several American Brands of Neoarsphenamine. T. F. Probey.—p. 2242.
Hemorrhagic Adrenal Necrosis in Rats on Deficient Diets. F. S. Daft and W. H. Sebrell.—p. 2247.
Hemorrhagic Cortical Necrosis of Adrenals in Rats on Deficient Diets. A. A. Nelson.—p. 2250.

54: 2269-2334 (Dec. 29) 1939

*Trends, Geographic and Racial Distribution of Mortality from Heart Disease Among Persons 5 to 24 Years of Age in the United States During Recent Years (1922-1936): Preliminary Report. O. F. Hedley.—p. 2271.
Chloropicrin as Prewarning Gas in Ship Fumigation. G. C. Sherrard.—p. 2297.
Successful Transfer of Lansing Strain of Poliomyelitis Virus from Cotton Rat to White Mouse. C. Armstrong.—p. 2302.

Geographic and Racial Mortality from Heart Disease.—Hedley bases his report on information abstracted from the official mortality statistics issued annually by the United States Bureau of the Census. A downward trend in heart disease mortality among young persons has been noted by several writers. This is corroborated by the author, as he found that death rates from heart disease among persons from 5 to 24 years of age in every section of the country and in every state of the Union in which statistics were obtained showed a decline in the mean annual death rate in 1930-1936 as compared with 1922-1929. The highest mean annual death rates from heart disease among persons from 5 to 24 years of age during 1922-1936 were encountered in the Middle Atlantic states, where the rates were higher than in New England, long supposed to have the highest incidence of rheumatic heart disease. The Mountain and the East North Central states too have a higher reported mortality from heart disease during the age period under study than New England. The Pacific Coast, South Atlantic, West North Central, East South Central and West South Central states follow New England in the order mentioned. Utah, New York, New Jersey, Colorado, the District of Columbia, Pennsylvania, Illinois and Massachusetts had the highest rates, in the order listed. All these states had death rates from heart disease of more than 20 per hundred thousand of population among persons of the ages under consideration during the fifteen year period studied. Mortality from heart disease has continued to decline during the recent economic depression. The death rates from heart disease are higher among Negroes from 5 to 24 years of age in every state and nearly every city in which tabulation according to race is made. This applies to the cities of the North as well as to the cities and states of the South. It indicates a higher mortality rate from rheumatic heart disease among young Negroes. Death rates from heart disease were appreciably lower among white persons of this age group in the deep South than for both races in the Middle Atlantic and New England regions (mostly white) and among the white popula-

tions of most Southern as compared with Northern cities. Rates in cities with more than 100,000 population tended to be significantly higher than in the states and geographic sections in which they are located. This was especially evident in cities of more than 500,000 population. The need for school surveys of heart disease, especially in the South, is emphasized. Studies should be conducted to determine the reason for this apparent decrease in mortality from rheumatic heart disease among young persons, with the view to accelerating further the decline.

Rhode Island Medical Journal, Providence

22: 1-16 (Jan.) 1940

Anesthesia for the Benefit of the Patient: I. Premedication. A. H. Miller, Providence.—p. 1.
Id.: II. Anesthetic Agents. M. Sahlad, Providence.—p. 3.
Id.: III. Methods of Administration. J. A. Hayward, Providence.—p. 6.

Southern Medical Journal, Birmingham, Ala.

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Medicine as a Profession: Some Outstanding Obligations. W. E. Vest, Huntington, W. Va.—p. 1.
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Clinical Management of Ureteral Stones. W. M. Coppridge, Durham, N. C.—p. 18.
Epidermitis and Interstitial Keratitis from Hypothyroidism. J. B. Stanford, Memphis, Tenn.—p. 27.
Roentgen Therapy to Pituitary Gland in Functional Disturbances of and Associated with Menstruation. J. C. King, Memphis, Tenn.—p. 28.
*Remote Effects of Toxemia of Pregnancy. M. S. Lewis, Nashville, Tenn. —p. 36.
Use of Cyclopropane in Wisconsin General Hospital During the Past Year. H. R. Hathaway, Madison, Wis.—p. 45.
Pneumonia in Infants and Children. C. M. Pounders and F. M. King, Oklahoma City.—p. 58.
Present Status of Endocrine Diseases of Childhood. F. B. Talbot, Boston.—p. 63.
Present Status of the Tuberculosis Situation in the Southern States. P. H. Ringer, Asheville, N. C.—p. 68.
Mortality in Psychotic Illness: Statistical Study of the Georgia State Hospital Since the Beginning of the Pellagra Research Program of the United States Public Health Service in 1914. H. D. Allen Jr., Milledgeville, Ga.—p. 73.
Program for Control of Syphilis. G. F. McGinnes and H. Packer, Memphis, Tenn.—p. 78.
Sulfamethylthiazol: Report of Its Clinical Use in Staphylococcic Septicemia with Apparent Success: Report of Animal Experiments. G. Carroll, L. Kappel, L. Jones, F. W. Gallagher and F. W. DiRocco, St. Louis.—p. 83.

Remote Effects of Toxemia of Pregnancy.—Lewis followed for from one to twelve years seventy cases of nonconvulsive and thirty-seven cases of convulsive toxemia in subsequent gestations. Of the seventy cases in the nonconvulsive series recurrent toxemia developed in forty-three, eighteen showed no ill effects following the toxemia and permanent vascular renal disease developed in nine. Of the thirty-seven cases in the convulsive series recurrent toxemia developed in eighteen, fifteen showed no ill effects following the toxemia and permanent vascular renal disease developed in four. The duration and severity of the toxemia before the birth of the child seems to be an important factor in the development of permanent vascular renal disease. The age, parity and the degree of hypertension may be of equal importance. However, these factors play a minor part in the convulsive group. Recurrent toxemia may appear in the absence of any detectable sign of renal impairment. The prognosis seems to be more favorable in the convulsive group if the patient survives the initial toxemia. If all patients who have had late toxemia of pregnancy would report for antepartum care as soon as pregnancy is suspected, the incidence of eclampsia would be greatly reduced and the mild forms of toxemia would be discovered and dealt with earlier. A precise knowledge of the time and mode of onset of a toxemia would be helpful in evaluating the danger of continuing the pregnancy. In this way cardiovascular renal disease would not develop in many women at an early age and it would probably be postponed for many years. Antepartum care is imperative if the major risks are to be avoided, especially as the rapid recovery which usually follows one attack gives the patient a false sense of security. The author believes that no woman should be exposed to further risk if she has had two or more toxic pregnancies. Contraceptive advice should be given, as the risks of future recurrence increases with each succeeding pregnancy.

Southwestern Medicine, El Paso, Texas

23: 391-424 (Dec.) 1939

Lengthening of Life. H. Randolph, Phoenix, Ariz.—p. 391.
Management of Anemias. P. Corr, Riverside, Calif.—p. 394.
Physiologic Biliary Flush in Management of Biliary Tract Disease. R. R. Best, Omaha.—p. 396.
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Unusual Vertebral Anomaly. H. E. Hippe, Marlin, Texas.—p. 404.
Severe Fractures of Shaft of Tibia (Description of Method of Reduction). M. G. Rosenbaum, Albuquerque, N. M.—p. 405.

Surgery, Gynecology and Obstetrics, Chicago

70: 1-128 (Jan.) 1940

*Treatment of Staphylococcic Septicemia with Bacteriophage. A. B. Longacre, Helen Zaytseff-Jern and F. L. Meleney, New York.—p. 1.
Surgical and Anatomic Aspects of Case of Double Lower Lip. M. L. Mason, B. J. Anson and L. E. Beaton, Chicago.—p. 12.
Experimental Study of Pain in Human Biliary Tract Induced by Spasm of Sphincter of Oddi. J. A. Layne and G. S. Bergh, Minneapolis.—p. 18.
Secretory Depressant in Achlorhydric Gastric Juice of Patients with Carcinoma of Stomach. A. Brunschwig, T. H. Clarke, J. van Prohaska and R. L. Schmitz, Chicago.—p. 25.
Digital Plethysmograph as Measure of Peripheral Circulation. C. A. Johnson, Chicago.—p. 31.
*Severer Forms of Acute Appendicitis, with Special Reference to Treatment of Appendical Abscess. E. E. Arnheim and H. Neuhof, New York.—p. 42.
Studies in Blood Preservation: Serum Potassium of Cadaver Blood. J. Scudder, Dorothy R. Corcoran and C. R. Drew, New York.—p. 48.
Hematomas of Umbilical Cord. A. L. Dippel, Baltimore.—p. 51.
Aseptic Gastric Resection: I. Method of Aseptic Anastomosis Adaptable to Any Segment of Alimentary Canal (Esophagus, Stomach, Small or Large Intestine) II. Including Preliminary Description of Subtotal Excision of Acid Secreting Area for Ulcer. O. H. Wangensteen, Minneapolis.—p. 59.
Method of Valvular Cholecystgastrostomy. R. Zollinger, Boston.—p. 71.
Enterogenous Cysts. C. F. Sawyer, Chicago.—p. 78.
Cancer of Breast. I. R. Trimble, Baltimore.—p. 82.
Trauma to Kidney. J. H. Harrison, Boston.—p. 93.
Gas in Bowels: Observations and Experiments in Man. A. Oppenheimer, Beirut, Lebanon, Syria.—p. 105.
Management of Diverticulum of Bladder: Ninety-Six Patients Treated by Transurethral Prostatic Resection. G. J. Thompson, L. H. Kermott and H. Cabot, Rochester, Minn.—p. 115.
Results of Amnesia and Analgesia in 171 Consecutive Cases of Labor. A. T. Lundgren and W. A. Boice, Chicago.—p. 120.

Bacteriophage for Staphylococcic Septicemia.—Longacre and his associates compare the results obtained with bacteriophage in the treatment of thirty-six consecutive cases of Staphylococcus aureus septicemia with those obtained in fifty-four not treated with bacteriophage. In their early experiences with bacteriophage the authors used relatively small doses and were not as certain of its potency as they have been more recently. They have therefore divided the cases treated with bacteriophage into two groups: those (fifteen) treated before October 1936 and those (twenty-one) treated for the two years after that date. At this time they not only increased the amounts given but they put their criterion for the potency of the bacteriophage on a much sounder basis. The method for determining the potency of bacteriophage is outlined. The bacteriophages used during the last two years were able not only to clear the culture of the organism in liquid medium but to prevent subsequent growth on a blood agar plate. To this bacteriophage the authors have given the name "double potency phage." The mortality in the early group was 73.3 per cent, in a later group of twenty-one cases it was 28.5 per cent and in the entire group of thirty-six cases it was 47.2 per cent. In the control group of fifty-four cases the mortality was 81.4 per cent. The authors' review of the literature shows the mortality rate of patients with this disease not receiving bacteriophage to be about 80 per cent. The results obtained in this series of cases, especially those in the last two years, make them feel certain that bacteriophage offers a favorable prognosis to patients ill with this disease, if the bacteriophage is of a high potency and if it is given in large doses sufficiently early in the course of the disease.

Acute Appendicitis and Appendical Abscess.—Arnheim and Neuhof are convinced that death should rarely follow operations for acute phlegmonous or gangrenous appendicitis, appendicitis with local peritonitis or appendicitis with abscess. This view is based on 212 surgical cases in ward service and in private practice from 1931 to 1939. There were four fatal cases, a mortality of 1.8 per cent. Three of the deaths were in cases in which diffuse peritonitis existed at the time of operation. The

fourth death was that of a 73 year old man who had an appendectomy with drainage for acute gangrenous appendicitis. He died on the seventh postoperative day of pneumonia. A postmortem examination was not performed. The mortality was 0.7 per cent (one death) in 142 cases of acute phlegmonous or gangrenous appendicitis and 23 per cent in the thirteen cases of acute appendicitis with diffuse peritonitis. There were no deaths in forty cases of acute appendicitis with abscess or in seventeen cases of acute appendicitis with local peritonitis. The low mortality (with the exception of that of diffuse peritonitis) is attributed essentially to certain principles in operative technic and in general management before and after operation. Some aspects of diagnosis are stressed, with special reference to abdominal puncture. The choice of time for operation in acutely ill, dehydrated adults is discussed, with emphasis on deferred operation in the presence of proved diffuse peritonitis (proved by abdominal puncture). Avertin with amylene hydrate with the addition of inhalation anesthesia was employed in most cases. Incisions were placed over the known or assumed site of the lesion and were large enough for its complete exposure. Full visualization and isolation of the lesion is a basic feature of the operative technic. In the postoperative management, complicating intra-abdominal suppurative foci are searched for and adequate drainage is provided. Therefore daily (or more frequent) examinations should be made of regions in which complicating abscesses are apt to develop (subphrenic, pelvic, left abdominal). Even when an obvious distant lesion, such as a pneumonitis, may seem to explain the postoperative complication, examination of the abdomen remains an essential step. Reference is made to a study which has shown that suppuration is the most common cause of death after laparotomy for any infective intraperitoneal lesion. Some of the features of the management of appendical abscess which are discussed and on which the results are thought to be based are (1) deferred operation in the early stages of appendical abscess and operation when the acute manifestations have subsided, (2) complete exposure and walling off of the abscess by packs, (3) entry of the abscess through a plane of cleavage, (4) complete evacuation of all recesses of the abscess or abscesses, (5) meticulous technic, (6) removal of the appendix in most instances and (7) drainage of all recesses of the abscessed cavity or cavities by gauze packs and not by tube or rubber dam drains. There were few postoperative complications in the forty cases. A transient fistula to the open stump of the appendix was present in one case. Postoperative incisional hernia did not occur in any of the thirty-one cases followed from one to eight years after operation.

Wisconsin Medical Journal, Madison

39: 1-76 (Jan.) 1940

Sulfanilamide, Neoprontosil and Sulfapyridine: Their Clinical Application. A. E. Brown, Rochester, Minn.—p. 13.
Injuries of Urinary Tract. C. R. Marquardt and H. E. Cook, Milwaukee.—p. 18.
Some Types of Acute Cervical Cellulitis. S. J. Pearlman, Chicago.—p. 25.
Fibrosarcoma of Optic Nerve: Report of Case. J. W. Tanner and A. J. Hertzog, Eau Claire.—p. 29.
Bleeding Due to Capillary Defect. F. W. Madison and T. L. Squier, Milwaukee.—p. 31.

Yale Journal of Biology and Medicine, New Haven

12: 243-334 (Jan.) 1940

Adriaan Isebree Moens (1847-1891). P. Dow, Augusta, Ga.—p. 243.
Planographic Studies of Fourth Ventricle: Preliminary Report with Illustrative Case. O. Turner and W. Lutz, New Haven, Conn.—p. 251.
Chemical Studies on Nature of Susceptibility to Spontaneous Carcinoma of Mammary Gland in Mice. L. C. Strong, New Haven, Conn.—p. 255.
Cellular Reaction to Intraperitoneally Injected Blood. E. L. Sarason, New York.—p. 269.
Biologic Organization and the Cancer Problem. H. S. Burr, New Haven, Conn.—p. 277.
Cellular Reactions to Lipoid Fractions of Tubercle Bacillus: Phthiocerol, an Alcohol Derived from Human and Bovine Tubercle Bacilli. R. M. Thomas, New Haven, Conn.—p. 283.
Studies on Cancerogenic Azo and Related Compounds. R. Kinosita, Osaka, Japan.—p. 287.
Some Significant Features of Cancer Incidence in Japan. M. Nagayo, Tokyo, Japan, and R. Kinosita, Osaka, Japan.—p. 301.
Instance of Postesophageal Left Subclavian Artery, Unmated Right Oviduct and Absence of Right Kidney in Same Individual. H. B. Ferris, New Haven, Conn.—p. 305.
Histologic Changes in Rat Testis Following Heat Treatment. W. L. Williams, New Haven, Conn., and B. Cunningham, Durham, N. C.—p. 309.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

62: 341-448 (Dec.) 1939

Congenital Myotonia in the Goat. G. L. Brown and A. M. Harvey.—p. 341.
Observations on Effects of Trigeminal Denervation. G. F. Rowbotham.—p. 364.
Congenital Facial Diplegia Syndrome: Clinical Features, Pathology and Etiology: Review of Sixty-One Cases. J. L. Henderson.—p. 381.
Dynamics of Homonymous Hemianopias and Preservation of Central Vision. M. B. Bender and M. G. Kanzer.—p. 404.
Blood Changes in Dystrophia Myotonica. J. N. Cumings and O. Maas.—p. 422.
Biochemical Study of Cerebral Tissue and of Changes in Cerebral Edema. A. M. Stewart-Wallace.—p. 426.

British Journal of Radiology, London

12: 649-696 (Dec.) 1939

*Delineation of Articular Cartilage by X-Rays Without Aid of Contrast Mediums. E. L. Rubin.—p. 649.
Further Experiments with X-Ray Tubes for High Voltages Up to One Million Volts. A. Bouwers and J. H. van der Tuuk.—p. 658.
Lymphosarcoma. F. Roberts.—p. 667.
Fellowship. R. E. Roberts—p. 674.
Visualization of Nonmetallic Foreign Bodies. R. I. Roberts.—p. 680.
Gamma Ray Measurement of Radon. T. H. Oddie.—p. 686.
Radium Beam Therapy Unit at the Western Infirmary, Glasgow. A. A. Charteris and J. Thomson.—p. 692.

X-Ray Delineation of Articular Cartilage.—A method for the x-ray delineation of articular cartilage without the aid of contrast mediums is described by Rubin. The patient sits or lies on the x-ray table with the outer side of the thigh in contact with a rigid and immobile support placed a few inches above the knee. The knee should be fully extended, the x-ray tube centered above it and a film placed beneath it. The leg is grasped just above the ankle and outward pressure is exerted so as to produce abduction at the knee joint. The pressure should be exerted gradually but firmly, and quite a marked degree of lateral angulation of the knee joint can be produced without the patient experiencing pain. The patient is asked to indicate the point at which the degree of abduction cannot be exceeded without causing him pain. Abduction is not increased after this point has been reached, but the degree of abduction already established is maintained while an anteroposterior roentgenogram of the knee joint is taken. The resulting roentgenogram shows a slight increase in the joint space on the inner side of the knee. But, in addition, the inner part of the true joint space is delineated and appears as a black band of absolute translucency between the articular cartilage of the lower end of the femur and of the upper end of the tibia. It appears white, of course, in the positive print. The articular cartilage of the shoulder and metacarpophalangeal joints are also demonstrable by this method. If there is an effusion in the joint, the outline of the cartilage cannot be visualized. If failure to delineate the cartilage is encountered in a joint in which there is no effusion clinically, it probably indicates that an excess of fluid is nevertheless present in the joint, provided the articular cartilage is successfully delineated in the contralateral joint. Successful delineation of the articular cartilage excludes even a small effusion in the joint.

Indian Medical Gazette, Calcutta

74: 513-590 (Sept.) 1939

Tuberculosis of Tropical Countries (Primitive Tuberculosis and Partially Modified Disease). S. L. Cummings.—p. 513.
Tuberculosis Survey in a South Indian Town. P. V. Benjamin, M. C. Verghese, K. T. Jesudian and C. E. Varkhey.—p. 516.
Observations on Some Epidemiologic Factors of Tuberculosis in South India (as Studied from Cases at the Government Tuberculosis Hospital, Madras). K. S. Sanjivi.—p. 527.
Bronchiectasis: Its Etiology, Pathology, Diagnosis, Prognosis and Treatment. A. C. Uhil and K. N. Dey.—p. 529.
Collapse Therapy of Pulmonary Tuberculosis: Report on Second Series of 205 Thoracoplasty Operations on Ninety-Four Patients from the Wanless Tuberculosis Sanatorium, Wanlesvadi, District Satara. W. M. G. Jones.—p. 537.
Complications During Artificial Pneumothorax Therapy. R. Visvanathan.—p. 543.
Comparative Value of Different Gold Preparations in Treatment of Pulmonary Tuberculosis. Y. G. Shivhande.—p. 545.
Pneumoconiosis, with Special Reference to Silicosis, Anthracosis and Tuberculosis. P. K. Sen.—p. 547.
Tuberculosis of Lymphatic Glands in Neck. M. M. Cruickshank.—p. 554.
Planning of Tuberculosis Institutions in India. C. Primodt-Möller.—p. 559.

Medical Journal of Australia, Sydney

2: 953-984 (Dec. 30) 1939

Role of Surgery in Treatment of Peptic Ulcer. H. C. Darling.—p. 953.
Mental Conditions Associated with Cardiovascular and Renal Disease. J. McGeorge.—p. 959.

South African Medical Journal, Cape Town

13: 735-754 (Nov. 11) 1939

Peculiar Form of Renal Tuberculosis. L. Elaut.—p. 737.
Tuberculosis Problem in the Union of South Africa. P. Allan.—p. 740.

13: 755-774 (Nov. 25) 1939

The Health of the Medical Worker. D. P. Marais.—p. 757.
Case of Tuberculosis Caused by Bacillus of Bovine Type in the Union of South Africa. C. Harington and N. Emmerson.—p. 760.
Brucellosis. E. J. Pullinger.—p. 762.
Progress in Diagnosis and Control of Rabies. A. D. Thomas.—p. 763.
High Blood Pressure (Hyperpiesia). J. F. Haegert.—p. 766.

Chinese Medical Journal, Peiping

54: 303-402 (Oct.) 1939

*Lipoid Granulomatosis of Bones Without Symptoms of Schüller-Christian's Disease. I. Snapper.—p. 303.
Controlled Spinal Anesthesia with Percaine. J. Gray and E. L. Lee.—p. 317.
*Blood Vitamin C Content of Chinese in Peiping During the Winter of 1938 to 1939. T. F. Yu.—p. 334.
Ophthalmodynamometric Findings in the Chinese. T. H. Luo and H. L. Ch'en.—p. 345.
Report on Examination of 587 Normal Dogs in Peiping for Leishmania Infection: Observations on Experimental Production of Cutaneous Lesions on Normal Dog Inoculated with Canine Strain of Leishmania. H. L. Chung, C. W. Wang, C. U. Lee and W. T. Liu.—p. 354.
Establishment of Vagus Postpituitary Reflex: Review. H. C. Chang. p. 360.

Lipoid Granulomatosis Without Schüller-Christian Disease.—To demonstrate the existence of lipoid granulomatosis without the Schüller-Christian syndrome, Snapper reports three cases. The syndrome of Schüller-Christian is only one special—craniohypophysial—localization of the lipoid granuloma of the bones. The cases of lipoid granuloma of the bone without craniohypophysial symptoms are probably more frequent than the well known cases of Schüller-Christian disease. The characteristics of lipoid granulomatosis are as follows: 1. Multiple pseudocystic lesions simulate the lesions of von Recklinghausen's disease, sometimes even giving the picture of giant cell tumor or leading to spontaneous fractures. 2. The lesions of the skeleton are localized only in the pseudocystic and decalcified areas, the cortex is normal elsewhere and the generalized fibrous degeneration of the bone as seen in von Recklinghausen's disease is not present. 3. Tenderness of diseased bones is usually absent. 4. The biochemical changes characteristic of von Recklinghausen's disease are absent. 5. A slight hypercholesteremia is usually present. 6. Areas of typical xanthoma cells (foam cells) with double refractile cholesterol esters are found in biopsy specimens. The biopsy necessary for the diagnosis should be performed on relatively fresh lesions and not in the most extensive areas which have given rise to the most serious symptoms and signs, particularly fractures. These lesions are usually old and the lipoid granuloma has been replaced by fibrous tissue so that only the terminal stage of the lipoid granuloma simulating fibrous osteitis can be found. It seems possible that the disease as described by Albright and his co-workers may also be lipoid granulomatosis of the bones.

Blood Vitamin C Content of Chinese.—The winter vitamin C content of the blood of five groups of Chinese was determined by Yu. The first group consisted of eighty-two members of the house staff of the hospital and medical students. All of these were supposed to be on a well balanced diet. A small quantity of fruit was served only in the morning. Oranges, lemons, grapefruit and other fruits rich in vitamin C were served infrequently. On the whole, the vitamin C level of this group was very low, the average being 0.46 mg. per hundred cubic centimeters of blood. There were only four persons whose plasma vitamin C content exceeded 1 mg., all of whom took several oranges or raw turnips every day throughout the winter. If these four individuals were considered separately, the plasma vitamin C level of the rest of this group varied between 0.96 and 0.18 mg. with an average of 0.41 mg. All these house officers and medical students have fairly healthy gums in spite of the low plasma vitamin C. The second group consisted of forty-four inmates of the municipal poorhouse. Their average plasma vitamin C level was 0.2 mg., with a range between 0.12 and 0.38 mg. per cent. The excessively high food prices prevented the inmates from receiving any fresh vegetables during the winter. At the time when the plasma vitamin C was determined, they had been eating green vegetables for one month. The quantity of vegetables given was, however, relatively small. Although their plasma vitamin C content was extremely low, all the inmates considered themselves healthy and were able to carry on their manual work. On the other hand, practically all of them showed hypertrophied and bleeding gums as seen in scurvy patients. They had, however, no spontaneous bleeding elsewhere. The third group consisted of thirty-six hospital patients suffering from various diseases other than scurvy. The regular hospital diet did not influence the vitamin C content of the blood of these patients. Their plasma vitamin C content remained invariably low throughout. The average was 0.28 mg. per hundred cubic centimeters, varying between 0.11 and 0.42 mg. No manifest scurvy was present in any of the group. A fourth group was formed by seven hospital patients, who in addition to the ordinary hospital diet received extra vitamin C for several weeks. Their average plasma vitamin C content was 1.2 mg. per hundred cubic centimeters, the values ranging between 0.58 and 2.13 mg. The fifth group consisted of ten hospital patients with clinical signs of scurvy. The plasma vitamin C values of this group before treatment was instituted ranged from 0.1 to 0.23 mg. per hundred cubic centimeters, the average being 0.16 mg. That the low vitamin C content of the blood in the Chinese is really due to a lack of vitamin C supply and not to racial differences receives confirmation from the fact that the vitamin C level of the blood of Chinese goes up immediately if its supply is increased.

Tohoku Journal of Experimental Medicine, Sendai

37: 1-188 (Nov.) 1939. Partial Index

Studies on Changes in Intermediary Carbohydrate Metabolism and in Blood Protein During Respiration in Increased Atmospheric Pressure. T. Ishikawa.—p. 1.
Arakawa's Reaction and Vitamin C Content of Human Milk. S. Isono. —p. 33.
Influence of Sodium Bicarbonate on Oxygen Consumption of Retina of Rabbits in Vitro. N. Oyama.—p. 78.
Biologic Influence of Surgical Treatment on Exophthalmic Goiter and Thyrotoxicosis. K. Maruta.—p. 88.
Comparative Studies on Cerebral Action Current of Some Mammals. G. Ito and K. Kitamura.—p. 106.
Modification of Glomerular Filtration and of Tubular Retroresorption by Infusion of Acacia Solution and Blood Transfusion in Normal and Cantharidin Rabbits. M. Koiwa.—p. 139.
*Modification of Glomerular Filtration and Tubular Retroresorption by Injection of Hypnotics and Some Substances of Central Action (Naphthylamine, Picrotoxin). M. Koiwa.—p. 163.
Behavior of Blood Platelets in Some Surgical Disorders, with Special Consideration of Renal Tuberculosis. Y. Yabe.—p. 179.

Modification of Renal Function by Hypnotics.—Koiwa points out that there is still disagreement about the action of hypnotics on the diuresis and describes his own animal experiments with several hypnotics. He found that if chloral hydrate is given in small doses it promotes the diuresis, for it slightly increases the glomerular filtration and the tubular retroresorption. However, large doses of chloral hydrate as well as of barbital and phenobarbital produce a noticeable inhibition in the diuresis by reducing the glomerular filtration. This inhibiting action is most noticeable in the case of phenobarbital. Stimulation of the brain stem by picrotoxin and by naphthylamine results in a reduction of the glomerular filtration; moreover, by increasing the percentage of retroresorption in relation to the glomerular filtration the quantity of urine is decreased. The author thinks that the reduction of the glomerular filtration by picrotoxin is due to the central stimulation of the sympathetic and to constriction of the renal vessels. The fact that the percentage of retroresorption increases in relation to glomerular filtration is another factor in the decreased diuresis. Regarding the action of naphthylamine, the author says that the decrease in the glomerular filtration and inhibition in the diuresis which follow the injection of this substance are due primarily to the constriction of the renal vessels.

Encéphale, Paris

1: 225-274 (May) 1939

*Metrazol Therapy in Nonschizophrenic Psychoses. P. Delmas-Marsalet, M. Bergouignan and J. Lafon.—p. 225.
Presenile Dementia: Case. H. Claude and J. Cuel.—p. 243.
Familial Hypertrophic Neuritis with Pain as Principal Symptom: Case. S. Davidenkof.—p. 261.
Insulin Therapy, Without and With Metrazol Therapy. Leulier, Lechere, Casalis and Cappelle.—p. 268.

Metrazol Therapy in Nonschizophrenic Psychoses.—Delmas-Marsalet and his collaborators report on the use of metrazol in twenty-one cases of nonschizophrenic psychoses. Therapeutic response ranged from failure and improvement to cure. Best results were achieved in the ten cases classified under the head of mental confusion, with seven cures and three improvements. In five cases, represented by the manic-depressive type of mental disease, failures predominated over improvements and no cure was effected. In three of these five cases with backgrounds of melancholia and hypochondriac depression the potency of metrazol was so intense as to induce maniacal excitation (in one case by a single dose) and necessitate isolation. In the remaining six cases, representing different forms of delirium, one cure and one improvement are recorded. According to the authors, therapeutic modifications were complicated by the presence of previous mental conditions, such as paranoia. The one cure in this group concerned a woman aged 31, a highly nervous and anxious type, whose delirious onset occurred after normal childbirth. Her condition assumed the form of various accusations of infidelity against her husband and of fears of a poison plot against the life of her child and increased to the point of violent manifestations of anger dangerous to others. After two years she was hospitalized. Altogether three injections of metrazol were given. After the second injection she felt well. A normal condition was reported ten months later. The amount and frequency of dosage and the specific manner of administration in the management of these cases are not indicated. On the other hand, therapeutic effects were observed as early as the first injection in a number of cases. Total doses indicated range from two to twenty injections. At the basis of their procedure lies the theory that certain neurologic and mental disorders spring less from cerebral deficiency than from an altered functional condition that can be modified.

Journal de Chirurgie, Paris

54: 593-731 (Dec.) 1939

*Sprain and Luxation of Knee: Definition and Therapy on Basis of Thirty-Nine Cases. R. Leriche.—p. 593.
Some Surgical Aspects of Kussmaul-Maier Disease (Periarteritis Nodosa). H. Mondor, R. Ducroquet and C. Olivier.—p. 604.
Treatment of Fractures of Tarsal Scaphoid. P. Lance.—p. 625.
*Complete Circular Fracture of Cranium Without Functional Disturbances or Cerebromeningeal Lesions. P. Duval and F. Lazard.—p. 643.

Sprain and Luxation of Knee.—Leriche says that the characteristic clinical picture of sprain (edema, local heat, pain and functional incapacity) indicates only functional circulatory phenomena. In observations on thirty-six cases of sprains of the knee and three cases of luxations he emphasizes that there is an essential difference between these lesions. Sprain of the knee is essentially a vasomotor disturbance due to a ligamentous traumatism by forced rotation of the leg against the thigh, most often inside. In its usual type, sprain is without ligamentous laceration and without osseous avulsion. It is cured within a few days by means of anesthetic infiltration of the ligament at the injured and painful points. It is useless to immobilize the member, to make compressive bandages or to massage the part. In some cases the sprain is complicated by ligamentous lesions which involve particularly the cruciate ligaments. They may extend so as to constitute a rupture or an avulsion of the tibial insertion, but an avulsion of a small portion, rarely extensive in volume. The author also has seen chipping of the patellar edge. He never saw, in his thirty-nine interventions, the lesions described as classic on the basis of experimentation on the cadaver, the lesion of Segond and Gangolphe. Regarding the complicated sprains he says that early operation is advantageous in these cases. Luxations of the knee are produced by an entirely different mechanism than are sprains (the body is projected forward while the foot and leg are fixed); they represent luxations of the femur through the tibial collateral ligament. These grave traumatisms produce a veritable dislocation of the knee, which has nothing in common with sprain. It is necessary to cease confusing the two mechanisms and lesions. They should be strictly differentiated. The luxations of the femur, which are readily reduced because of the enormous ligamentous gap, justify an early operation for repair of the ligamentous damage.

Circular Fracture of Cranium Without Functional Disturbances.—Duval and Lazard report the history of a man, aged 42, thrown from a horse so that the back of his head struck the pavement. He did not lose consciousness and when he arrived at the hospital only a small cutaneous wound was detected in the occipital region. Later he had a mild epistaxis. There were no functional disturbances and the reflexes were normal. After several days the condition of the patient seemed absolutely normal. However, roentgenoscopy of the cranium disclosed a circular fracture, which began in the occipital region at the point of the trauma. It then passed in the lateral and forward directions, traversing the two temporal fossae; its trace was lost in the facial massive; but it seemed to reach the median portion of the orbital fossae and traversed the most anterior portion of the base of the brain, probably at the level of the ethmoid. The discovery of this extraordinary fracture led to a spinal puncture, but the cerebrospinal fluid was found to be entirely normal. The case is noteworthy because the circular cranial fracture caused neither a break in the dura mater nor encephalic changes, which was proved by the absence of clinical disturbances and by the normal condition of the cerebrospinal fluid.

Presse Médicale, Paris

47: 1585-1608 (Dec. 6-9) 1939

Technic of Peritoneal Drainage in Abdominal Wounds Caused by War Projectiles. J.-L. Faure.—p. 1585.
Tuberculosis and Ascitic Cirrhosis. J. Monges and R. Poinso.—p. 1586.
*Treatment of Painful Amputated Stumps with Synthetic Vitamin B_1. A. Sliosberg.—p. 1589.

Treatment of Painful Amputated Stumps with Vitamin B_1.—Sliosberg reports the results of treatment of painful amputated stumps with synthetic vitamin B_1. Treatment consisted of daily subcutaneous injections of vitamin B_1, mostly 0.01 Gm. Of seventy-four patients eleven were completely relieved, thirty-nine showed considerable improvement, ten moderate and seven slight improvement; treatment failed in seven instances. Results included decreasing intensity and frequency of continued and paroxysmal pain and of cutaneous and reflex phenomena. Examination of the stump revealed decreased cyanosis, equalization of cutaneous heat of the opposite sides and in many cases increase of the circumference of the stump from one half to one inch and decrease of arterial hypertension. Study of the rapidity of action of synthetic vitamin B_1 revealed that completely relieved patients reacted mostly after the first and second injection and that the earlier was the response the better were the final results.

Cardiologia, Basel

3: 365-424 (Dec.) 1939

Nonperiodic Variations in the PR Interval in Man. F. M. Groedel and B. Kisch.—p. 365.
Relations of Cardiac Action Phases to Frequency of Cardiac Beat. A. Huttmann and A. Eiser.—p. 371.
Significance of Venous Pressure Registered with Clinical Methods: Relations Between Arterial and Venous Pressures in Normal Conditions of Circulation. V. Scaffidi Jr.—p. 382.
*Mechanism of Acute Cardiac Pulmonary Edema. S. Wassermann.—p. 402.

Mechanism of Acute Cardiac Pulmonary Edema.—Wassermann reports a case of acute cardiac pulmonary edema in which electrocardiographic records were taken during the attack and during pressure on the carotid sinus, which proved to be therapeutically successful. The electrocardiographic records taken during the attack and during pressure on the carotid sinus do not greatly differ from those made during the interval as regards the rhythm, the beat rate and the conduction; however, the attack electrocardiogram showed a diminution of R_1 and R_2 (perhaps an indication of hypotonia of the cardiac muscle or of insufficiency). This decrease in size in the R wave disappeared when pressure was exerted on the carotid sinus. The success of the pressure on the carotid sinus suggests that the attacks are caused by an insufficiency of the pressoreceptor mechanism. The described case and several similar ones are noteworthy, because the pressure on the carotid sinus produced

only a negligible diminution of the frequency of the pulse (about ten beats a minute); this seems to suggest that pressure on the cardiac sinus during attacks of cardiac pulmonary edema exerts its effects by the vascular reflex rather than by the cardiac reflex. The dyspnea during the attack of pulmonary edema likewise is not regarded as a result of pulmonary stasis but is attributed to pressoreceptor insufficiency. Similarly, the development of alveolar edema is explained not as a sign of mechanical congestion but rather as a sequel of vasopulmonary reflex phenomena, such as vasospasm or vasoparalysis, perhaps increased by capillary permeability. This explains the prompt reversibility of the attacks (spontaneous improvement or by morphine or pressure on the carotid sinus). The pressoreceptor insufficiency may result from (1) anatomic changes in the aortocarotid region due to sclerosis, syphilis and so on, (2) insufficiency of the left side and the resulting decrease in arterial pressure or (3) a combination of these two factors. The significance of the insufficiency of the greater circulation from the point of view of the pressoreceptor apparatus is discussed.

Schweizerische medizinische Wochenschrift, Basel

69: 1261-1296 (Dec. 16) 1939. Partial Index

*Iodine in Treatment of Hyperplasia of Thymus. E. Glanzmann.—p. 1261.
Relations of Liver to Hydrogen Metabolism. H. von Hoesslin.—p. 1265.
Further Clinical Experiences with Sulfapyridine. W. Löffler and C. Maier.—p. 1268.
Turpentine Enema. E. Ruppanner.—p. 1275.
Mandelic Acid as Urinary Disinfectant. T. Gordonoff.—p. 1279.
Remarks on Treatment of Pyodermia. W. Lutz.—p. 1281.
Treatment of Acne Rosacea. E. Ramel.—p. 1283.
Meulengracht's Treatment of Bleeding Gastric Ulcer. A. Adler.—p. 1286.
Modification of Cholesterol Metabolism by Active Principle of Artichoke (Cynara Scolymus) and Use of This Principle (Chophytol) in Therapy of Arteriosclerosis. G. Schönholzer.—p. 1288.

Iodine in Hyperplasia of Thymus.—In this report Glanzmann is interested especially in the occurrence of hyperplasia of the thymus in the newborn with struma. The struma of the newborn may disappear soon after birth, but frequently it recurs in the course of the first year of life. This type of struma is also frequently accompanied by hyperplasia of the thymus, which, however, does not necessarily produce clinical symptoms. The author reviews the history of a nursling aged 11 months who had a large struma and hyperplasia of the thymus. Iodine treatment counteracted the hyperplasia of the thymus. The author treated a number of cases of mild hyperplasia of the thymus by means of iodine and obtained favorable results. It is possible that the iodine acts by way of the thyroid. This and the close functional relations between thyroid and thymus induced him to use iodine in cases of hyperplasia of the thymus, whether goiter was present or not. He reviews the histories of three nurslings aged 6, 8 and 4½ months in whom hypertrophy of the thymus responded to treatment with iodine. Ointment of potassium iodide (10 per cent) was rubbed daily into the region of the manubrium sterni, but the potassium iodide may be given also in the form of a solution. During the iodine therapy the weight should be controlled and, if there is a loss, the iodine treatment should be stopped.

Giornale di Clinica Medica, Parma

20: 1651-1736 (Dec. 30) 1939. Partial Index

*New Method for Rapid Diagnosis of Diphtheria. G. Agnetti.—p. 1684.
Rehberg's Test for Functions of Kidney. C. Seghini and F. Bazzi.—p. 1707.

Rapid Test for Diagnosis of Diphtheria.—Manzullo's sodium tellurite test for rapid diagnosis of diphtheria was described in THE JOURNAL, Sept. 3, 1938, p. 954, and in various Argentine and French medical journals. Agnetti used the test in forty cases in the hospital for infectious diseases at Parma City, obtaining typical positive results in thirty-three cases of diphtheria, atypical positive results in one case of diphtheria, typical negative results in five cases of follicular tonsillitis or Plaut-Vincent's angina and atypical negative results in a case of follicular tonsillitis. Typical positive (or negative) results of the test are clear. Atypical positive results are characterized by the appearance of the black or blackish gray color of the exudates with diffusion of the reaction on the entire pseudomembrane. Atypical negative results are characterized by the appearance of a pale gray color of the tonsillar follicles. In most of the cases observed by the author the results of the test agreed with those of the classic laboratory tests. The author concludes that the test is specific for diphtheria and that positive results show the advisability of prompt establishment of serum treatment without waiting for the results of the laboratory tests.

Policlinico, Rome

47: 41-80 (Jan. 15) 1940. Practical Section. Partial Index

*Parathyroidectomy in Scleroderma. G. Liuzzo.—p. 41.
Subacute Circumscribed Cortical Osteitis. C. B. Piana.—p. 50.

Parathyroidectomy in Progressive Scleroderma.—Liuzzo resorted to parathyroidectomy in the treatment of progressive scleroderma in two cases in adults. The disease dated back eighteen and three years respectively. The patients suffered from cold hands and cyanotic fingers before the cutaneous lesions developed. Later they suffered from recurrent formation of abscesses at the distal phalanges, with mutilation of the phalanges in the case of longer duration in which the disease was associated with typical Raynaud's disease. Scleroderma of the face and neck developed in both cases secondarily to the cutaneous lesions on the hands. There were moderate hypercalcemia and sympathetic disturbances in both cases. Bilateral parathyroidectomy was performed in the case of longer duration. In the other case the operation was unilateral. The parathyroids were normal on microscopic examination in both cases. The operation was followed by subjective amelioration. The patients reported a feeling of better elasticity of the skin at the involved regions and of improvement of the local circulation. Calcemia did not change in the case of longer duration and slightly diminished in the other one. The satisfactory results were transient. They lasted for about three months. The author concludes that a dysfunction of the parathyroids may be a factor in the pathogenesis of scleroderma but is neither the main nor the only pathogenic factor, and that parathyroidectomy is not justified in the treatment of the disease.

Riforma Medica, Naples

55: 1611-1632 (Nov. 11) 1939

*Variations of Nitrogen in Blood After Cerebral and Meningeal Hemorrhage. F. Raggi.—p. 1611.
Appendectomy with Small Incision: Technic. G. Iesu.—p. 1619.

Nitrogen in Blood in Cerebral and Meningeal Hemorrhages.—Raggi followed the behavior of azotemia in thirty-eight cases of cerebral or else meningeal hemorrhage in persons who had normal kidneys and no history of renal disease in the past. The determinations of nitrogen in the blood were made on the day the stroke occurred or two or three days after and then at intervals of three days for three weeks and of one week for one month. The author found that in all cases of cerebral and meningeal hemorrhage the amount of nitrogen in the blood increases within the first few days after the stroke occurs. Azotemia does not exceed figures of 1 mg. of nitrogen for each thousand cubic centimeters of blood and lasts no longer than a week or twelve days in cases of moderate cerebral lesion from hemorrhage. Hyperazotemia varies within 1.2 and 1.6 mg. of nitrogen for each thousand cubic centimeters of blood and lasts for two or three weeks in grave cases which follow an evolution to recovery and within 2 and 3 mg. in acute cases in which there is grave coma, with death three or four days after the stroke. If death occurs within one or two days after the stroke, hyperazotemia does not appear. The author concludes that the variations of azotemia in cerebral and meningeal hemorrhages are of a prognostic value. With the exception of the cases which follow a rapidly fatal evolution, the more acute the cerebral lesion from the hemorrhage the more grave the evolution of the condition and the higher the figures of hyperazotemia.

Revista Españ. de Med. y Cir. de Guerra, Valladolid

3: 231-312 (Oct.) 1939. Partial Index

Route of Approach to Intraperitoneal Wounds During War. F. Cuadrado.—p. 267.
*Sulfanilamide in Treatment of Smallpox. S. Pierna.—p. 279.

Sulfanilamide in Smallpox.—Pierna employed sulfanilamide in cases of smallpox in two different epidemics after the war in Spain. The infection was subacute, acute and confluent in the majority of cases and benign in rare cases. Seven cases are reported. In the majority, treatment began in the vesiculopustular stage. He found that early in the treatment the general

condition of the patients improves. During the first forty-eight hours the fever disappears, the inflammation subsides and the halo of the vesicles becomes pale and then disappears. Coincidentally the vesicle stops growing, turns gray, shows umbilication and becomes an attenuated pustule which dries up in four or five days. The character, form, aspect and fetor of the crusts and their attachment to the skin depend on the acuteness and extension of the disease. In all cases, however, the crusts drop off in from four to six days. In subacute and acute cases, dropping off of the crusts leaves more or less pigmented spots which disappear late after convalescence but never scars. In cases of confluent variola, superficial scars remain. In some cases of acute, subacute or confluent evolution a furfuraceous peeling takes place after detachment of the crusts, which can be controlled by application of sterile ointments on the skin. No complications were observed in the cases in which sulfanilamide was used. The author compared the evolution of the disease with that of a group of cases of benign smallpox in which sulfanilamide was not administered. He found that the vesiculopustular evolution, desiccation and peeling off was accomplished in less than half the time in the sulfanilamide group in comparison to the control group. The scars were deeper and larger in cases in the latter group. The author believes that sulfanilamide attenuates the smallpox virus and that the drug is specific for the treatment of smallpox.

Chirurg, Berlin

11: 737-768 (Nov. 1) 1939. Partial Index

Treatment of Recent Wounds in War and in Peace. E. von Redwitz.—p. 737.
Questions Relating to Amputations. M. zur Verth.—p. 743.
*Multiple Primary Malignant Neoplasms. E. König.—p. 747.
Unusual Fatigue Fractures. H. Mussgnug and N. Jannopoulos.—p. 753.

Multiple Primary Malignant Neoplasms.—According to König, Billroth insisted on the following criteria for the establishment of multiple primary malignant conditions: The tumors must vary microscopically as well as in their origin and each, in the end, must give rise to its own metastases. König considers these criteria too strict and is inclined to accept Siebke's view that the necessary conditions are fulfilled if, on a careful study, it has been shown that the tumors in question were not related to one another. The fact that the number of microscopic varieties of carcinoma is rather small does not exclude the possibility of two independent tumors resembling each other microscopically. The metastases do not always follow the structural pattern of the original neoplasm. Important as the microscopic differentiation is for the decision, one cannot rely entirely on it but must take into consideration the anatomic and clinical characteristics of the tumors as well as their response to the treatment. The localization of the tumors is of the greatest importance. The time elapsing between the appearance of two tumors is of limited value. The localization of the second tumor is an important factor in deciding whether it is a metastasis of the first tumor or an independent growth. The age of the patient does not appear to play any part. The incidence of multiple malignant tumors as given in the various statistics vacillates between 1 and 2 per cent of all malignant conditions. The author had ten among a total of 720 malignant conditions (1.4 per ceht). The combination of carcinoma and sarcoma is rare. Jolkwer had collected fifty cases up to 1929, to which the author adds one of his own and one of Kreibig's. More than two dissimilar primary tumors constitute a rare occurrence. The most frequent combination is that of a skin carcinoma with a carcinoma of some other part. The author had four such cases. The question of primary bilateral carcinoma of the breast has been much debated. The incidence was given as high as 5.29 per cent (Gjankowić). The criteria here must be even more strict because of the lymph channels running between the two breasts. König points out the difficulty of regarding the tumor appearing in the opposite breast as a single metastasis because the breast is only exceptionally the seat of metastases. He believes therefore that in the presence of bilateral mammary neoplasms developing at different periods, and in the absence of axillary involvement or any other evidence of metastases, the patient remaining well for years after operative removal of the two, one is justified in considering the second tumor as an independent neoplasm rather than a metastasis of the first.

Medizinische Welt, Berlin

13: 1547-1568 (Dec. 9) 1939. Partial Index

Weil's Disease. H. Ruge.—p. 1547.
Meningeal Course of Weil's Disease. A. Dohmen.—p. 1551.
Autohemotherapy with Irradiation. E. Sehrt.—p. 1554.
*Thallium, the New Homicide and Suicide Poison. H. Steidle.—p. 1557.

Thallium Poisoning.—Steidle says that a review of cases in which thallium was used with criminal intent indicates that to some extent thallium seems to have assumed the toxicologic role of arsenic. After one or two days there usually develops a polyneuritis with severe muscular and articular pains, which are localized chiefly in the soles of the feet, the calves of the legs and the knee joints. The patient complains of a furry feeling, formication and hypersensitivity to touch. During the third or fourth week loss of hair sets in, which may lead to complete baldness. Loss of hair in connection with the pains in the legs may be regarded as the characteristic sign of thallium poisoning. General weakness and loss of weight are frequent. The onset of thallium poisoning is sometimes accompanied by vomiting, diarrhea and intestinal colics, which are later followed by constipation. Tachycardia is frequent. The blood picture usually presents an increase in eosinophils, particularly lymphocytes. The urine may contain protein, granulated casts and erythrocytes. The finger nails may show transverse streaks similar to those occurring in arsenic poisoning. Impairment of vision and even complete blindness has been known to occur. Excitation and prolonged insomnia are also frequent. He reviews two cases. In obscure forensic cases it should be a rule to search not only for arsenic but also for the thallium. Thallium can be found in the urine for weeks or months. In the body it is found not only in the blood but especially in the liver, the kidneys and the skeletal musculature. In cadavers it can be detected after years. Among the methods of demonstration, the author regards the spectroscopic one as of greatest importance. It permits the detection of thallium salts if they amount to only 1 part in 100,000. If one drop of such a solution, which contains from 0.02 to 0.03 microgram of thallium, is evaporated in a platinum loop and is then brought into the nonluminant flame, the characteristic light green line can be seen at 5,350.48. The author recommends the spectral analytic method of Bohnenkamp and van Calker for quantitative determinations in forensic cases.

Münchener medizinische Wochenschrift, Munich

86: 1639-1686 (Nov. 24) 1939. Partial Index

Differential Diagnosis of Acute Inflammations of Uterine Tubes and of Vermiform Appendix. W. Geisthövel.—p. 1662.
*Pathogenesis of Cushing's Syndrome. J. Jacobi and F. Tigges.—p. 1665.
Significance of Diagnosis in Psychotherapy. W. Hilger.—p. 1668.
Experiences with Dolantin (1-Methyl-4-Phenylpiperidine-4-Carboxylic Acid-Ethylester), a Spasmolytic with Myotropic and Neurotropic Action. E. F. Klein.—p. 1674.

Pathogenesis of Cushing's Syndrome.—Jacobi and Tigges say that Cushing designated the syndrome named "pituitary basophilism" because in eleven of fourteen cases he observed a basophilic adenoma of the anterior pituitary which he regarded as the cause of the disease. This opinion has been challenged, but before they explain their own stand on this problem they report two cases of Cushing's syndrome. The first case was characterized by an increase in the corticotropic hormone, by hypertrichosis and by hyperphosphatemia from organic phosphorus. In the second case the corticotropic hormone was likewise increased but there was no hypertrichosis and the hyperphosphatemia was due to an increase in lipoid phosphorus. It is noteworthy that in the first case the necropsy failed to disclose an adenoma of the hypophysis but did reveal a hypertrophy of the adrenals with circumscribed adenomas in the cortex. The authors review the leading opinions regarding the pathogenesis of Cushing's syndrome and show that these raise the following questions: Are Cushing's syndrome and interrenalism identical? Is the basophilism primary or secondary? Is the hyperplasia of the adrenal cortex primary or is it the result of an increase in the interrenotropic (corticotropic hormone of hypophysis) hormone? Can Cushing's syndrome develop without increase in the interrenotropic hormone? The authors assume that the majority of cases of Cushing's syndrome are caused by a functional disturbance in the anterior pituitary with an increase in

the interrenotropic hormone. This excess in interrenotropic hormone leads to an increase in the hormone of the adrenal cortex usually with simultaneous hyperplasia of the cortex and thus to Cushing's syndrome. Less often, when there is no increase in the interrenotropic hormone, the development of Cushing's syndrome is presumably the result of a primary hyperfunction of the adrenal cortex (tumors of the adrenal cortex). The significance of basophilism is still obscure because it has been absent in cases of Cushing's syndrome in which there existed an increase in the corticotropic hormone. Only a careful search for the corticotropic hormone and a comparison with histologic changes will further promote the clarification of the pathogenesis of Cushing's syndrome. Clinical methods will reveal the hormone, not, however, the anatomic changes in the pituitary or the adrenals. The aforementioned explanation of the pathogenesis has therapeutic significance. In a number of cases of Cushing's syndrome, roentgen irradiation of the pituitary has produced good results. The authors believe that the success or failure of this therapy is chiefly dependent on whether or not the rays are applied to the organ in which the primary process exists; that is, if the primary disorder is in the adrenals, irradiation of the pituitary will give no prospect of cure, though irradiation or surgical treatment of the adrenals would do so.

86: 1715-1742 (Dec. 8) 1939. Partial Index

Organization and Transport in Sanitary Service During Aerial Warfare. W. Anschütz.—p. 1715.
Bronchial Asthma and Allergy. H. Kämmerer.—p. 1720.
Psychotherapeutic Treatment of Bronchial Asthma. I. H. Schultz.—p. 1723.
*Question of Familial Predisposition for Complications of Otitis Media in Scarlet Fever. A. Gleissner.—p. 1725.
Question of Genesis of Block Formation of Vertebral Column. F. Reif.—p. 1729.
Dry Blood Test for Syphilis: Simplification. E. Zimmermann.—p. 1732.

Familial Predisposition for Otitis Media in Scarlet Fever.—Previous investigations on the possibility of familial predisposition for sequels of scarlet fever having produced contradictory results, Gleissner reports studies of 356 cases of scarlet fever at the city hospital in Görlitz from April 1937 to April 1939. These 356 cases amounted to more than 50 per cent of the cases occurring in the entire district, the total number on record for the period being 672. Of the 356 cases of scarlet fever observed at the hospital, otitis media developed in nineteen (5.3 per cent). Eleven of these nineteen belonged to the group of sixty-one cases of scarlet fever from families in which more than one case of scarlet fever occurred, the eleven cases belonging to seven families. Of the remaining 295 cases of scarlet fever observed at the author's hospital, otitis media developed in only eight, or 2.7 per cent. Inquiries disclosed that of the 296 cases of scarlet fever occurring in the same district but not seen at the author's hospital, otitis media developed in eight. The author deduces from these figures that certain families have a predisposition for otitis media as a sequel of scarlet fever.

Wiener Archiv für innere Medizin, Vienna

38: 145-212 (Nov. 20) 1939

*Fever Therapy in Chronic Enterocolitis. E. Lauda and G. Stritzko.—p. 145.
Clinical Diagnosis of "Intermediary Liver Engorgement." H. Kahler.—p. 167.
Accompanying Signs of Chronic Gastro-Enteritis. F. Bodart and R. Klima.—p. 178.
Thyroid Gland Studies in Switzerland: Contribution to Endemiology of Goiter. W. Risch.—p. 197.

Fever Therapy in Chronic Enterocolitis.—Lauda and Stritzko report seven cases of chronic enterocolitis in which good results were obtained by means of pyretotherapy. The age of the patients was between 30 and 53. The diseases presented ranged from grave enteritis to ulcerous proctosigmoiditis. In individual cases chronic illness had lasted for from ten to twelve years. Fever therapy consisted of injections of milk, typhus and autogenous vaccines and of blood transfusions. The therapeutic objective of producing high febrility governed the changes from milk to typhus vaccine or from blood transfusion to milk, then to blood transfusion, or from autogenous to typhus vaccine, then to milk and again to typhus vaccine and so on. Almost immediate results could be observed. The seven cases are a part of fifty cases of chronic enterocolitis pyretotherapeutically managed with good results in half of them. The authors regard fever therapy as contraindicated in septic cases, cachexia and defective circulation. Cases of colitis they found respond better to the treatment than enteritis. Ulcerous colitis, as well as simple enteritis, was benefited.

Zeitschrift für Immunitätsforschung, Jena

97: 1-108 (Nov. 17) 1939

Complement Content of Human Serum. E. Schuchardt.—p. 1.
Aspects of Antigenic Relations of Shiga Dysentery Bacillus and of Blood Group Substance Zero in Human Subjects. Inge Schmidt-Schleicher.—p. 14.
Significance of Factors M and N for Forensic Medicine with Especial Consideration of Procedures Used for Determination of Ns. H. Langenberg.—p. 48.
Diagnosis of Brucellosis by Means of Marginal Values of Agglutination Reaction (in Man and Animals). E. Vellisto.—p. 68.
*Vanadium in Treatment of Protozoal Diseases in Human Subjects. J. Pereira.—p. 77.
Influence of Iron, Manganese and Copper on Course of Poisoning with Diphtheria Toxin. H. O. Hettche.—p. 81.
Histamine and Burns. T. Wense.—p. 100.

Vanadium in Treatment of Protozoal Diseases.—Pereira first describes his experiences with vanadium sodium tartrate in syphilis. The salt, in the form of an aqueous solution (0.15 Gm. in 2 cc.), is injected intramuscularly twice weekly. The spirochetes, which could always be demonstrated in the exudate of the primary lesion, disappeared within twenty-four to forty-eight hours and cicatrization was completed in from three to six days. The secondary lesions of skin and mucous membranes likewise disappeared rapidly. Even gummas that had been refractory to bismuth compounds, arsenic and several series of arsphenamine were rapidly cured. The toxicity of vanadium tartrate is low, being tolerated even by children of less than a year. Stomatitis, erythema and hepatic disorders have been observed in rare instances. Because frambesia resembles syphilis, it was decided to try vanadium therapy also in frambesia. The results were favorable.

Zeitschrift für klinische Medizin, Berlin

136: 715-819 (Nov. 4) 1939. Partial Index

Value of Calcium and Vitamin C in Nutrition. G. Lemmel.—p. 715.
Frequency and Types of Gastric and Duodenal Ulcers. W. Madelung.—p. 727.
Essential Xanthomatosis. H.-G. Schmidt.—p. 738.
Rheumatic Myocarditis with Special Regard to Electrocardiogram Observations. J. Wolf and D. J. Athanasiou.—p. 753.
Alizarin Reaction as Means of Diagnosing Functional Disturbances of Kidneys. R. Teuß.—p. 775.
*Effect on Circulation of Hypoglycemic Shock Treatment in Schizophrenia. C. Ernst.—p. 797.

Hypoglycemic Shock Treatment in Schizophrenia.—Ernst examined the effect of hypoglycemic shock on the circulation of twenty-four schizophrenic patients between the age of 18 and 42. The examinations were carried out with the question in mind whether shock treatment can cause serious circulatory changes endangering life eventually. Readings of the electrocardiogram, frequency of the pulse, blood pressure, product of amplitude and frequency, circulating blood and plasma quantity were examined before administration of insulin and in deep shock. The changes observed were such as one may see in physical labor. The author found no proof of a lasting injury to the heart muscle.

Zeitschrift f. menschliche Vererbungslehre, Berlin

23: 661-788 (Oct. 26) 1939. Partial Index

Dementia Paralytics and Senile Dementia: Hereditary, Clinical and Anatomic Considerations. B. Patzig.—p. 661.
*Hereditary Transmission of Congenital Cardiac Anomalies. G. von Knorre.—p. 695.
Facial Changes in Developmental Disturbances and Diseases of Hypophysiodiencephalic System. K. Klöppert.—p. 721.
Congenital Amputations. R. Günther.—p. 736.

Hereditary Transmission of Congenital Cardiac Anomalies.—Von Knorre began his studies on the hereditary transmission of congenital cardiac defects with fourteen unselected severe cases. As far as possible, studies were made on the siblings, children, parents, uncles, aunts, cousins and grandparents of these patients. In all, 150 persons were examined not only with clinical methods but also with x-rays and, in many instances, electrocardiographic tracings. Case records and postmortem reports were investigated. The author reports

fourteen cases in which, among other defects, pulmonary stenosis, defects in the auricular and ventricular septums, open ductus botalli, congenital tricuspid insufficiency and stenosis of the aortic isthmus were present. He says that, among the persons closely related by blood to patients with severe congenital cardiac defects, mild forms of the same defect were detected repeatedly. These could be explained only in connection with the severe defect of the original patient. Examination with clinical methods disclosed little, but x-ray examination and electrocardiographic studies did reveal defects. The author concludes that extensive familial examinations are advisable in cases of obscure pathologic conditions of the heart.

Zeitschrift für Tuberkulose, Leipzig

84: 1-120 (Dec.) 1939

*Cure of Cavities by Suction Drainage According to Monaldi. H. Grass. —p. 1.
Suction Drainage for Cure of Tuberculous Cavities in Lungs. H. Weber. —p. 19.
Temporary Shadows in Lungs. G. Martens.—p. 26.
Behavior of Homolateral Pulmonary Lobe After Upper Partial Plastic Operation. A. Emmler.—p. 40.
To What Extent Do Roentgenologically Demonstrable Calcified Foci Occur in Pulmonary Tuberculosis of Adults? H. Malmros and R. Ardell.—p. 46.
Blood Albumin Colloid Curves in Pulmonary Diseases. B. Dubócsky. —p. 50.

Monaldi's Suction Drainage of Cavities.—Grass directs attention to Monaldi's method of suction drainage in the treatment of tuberculous cavities. In this method the cavities are punctured through the thoracic wall and a thin rubber catheter is introduced through which air and the other contents of the cavity are constantly suctioned off. Monaldi having employed this method with good results in more than 100 cases, Grass decided to try this procedure on his own patients, the more so since it does not greatly tax the reserve powers of the patient and thus can be employed in weak and in old persons. The method is essentially the application of Bühlau's empyema drainage to the tuberculous cavity of the lung, but it is more difficult in some respects. One of the greatest difficulties is the exact localization of the cavity. The position and size of the cavity must be known in order to determine the site, direction and depth of the introduction of the trocar. The author gives a detailed description of the technic. He thinks that the suction drainage is indicated especially for the treatment of cavities for which other procedures are either too dangerous or not suitable. He reports and discusses the six cases in which he employed the method with good success. He stresses the favorable effects on the general condition and says that his results were essentially like those obtained by Monaldi. In a considerable number of Monaldi's cases the treatment has been completed and in none of them did a fistula remain. In at least half of them a complete success was obtained.

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*Tumors of Thymus. Kouwenaar.—p. 3103.
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Present Status of Therapy of Carcinoma of Cervix Uteri and Results in Batavia During Years 1931 to 1934. R. Remmelts.—p. 3174.
*Myxomas. R. E. J. ten Seldam.—p. 3191.

Tumors of Thymus.—Kouwenaar calls attention to the different hypotheses about the origin of some elements of the thymus, especially the so-called thymus cells. He cites the theories of substitution and transformation. He thinks that this difference of opinion may perhaps explain also why statistics differ so much as to the frequency of thymic neoplasms. He presents a critical analysis of a number of cases that he observed and classifies them as sarcoma, adenoma, carcinoma and thymoma. His report indicates that because of the great differences in structure the classification is difficult but also that true carcinomas of the thymus are rareties.

Myxomas and Malignancy.—Ten Seldam reviews the literature on myomas and then reviews the myxoma material of the cancer institute of the Netherland East Indies. The latter comprises forty-two cases, namely fourteen fibromyxomas, twelve pure myxomas, two lipomyxomas, ten myxosarcomas, one lipomyxosarcoma and three chondromyxomas. The study of these cases and of the literature convinced the author that all myxomas are to be regarded as potentially malignant. Since irradiation gives little promise of success, the author thinks that every myxoma, including the recurrences, should be treated surgically and as radically as possible.

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Hematologic Changes, Especially Megalocytic Anemia, in Regional Ileitis. P. Plum and E. Warburg.—p. 449.
Experimental Studies on Wenkebach Periods, Block, Prolongation of Auriculoventricular Conduction and Continuous Arrhythmias: Electrocardiography After Administration of Physostigmine, Propetone, Morphine-Scopolamine and Nicotine. E. de Saxer.—p. 476.
Determination of Venous Pressure: New Apparatus. W. J. Kolff.—p. 524.
*Pernicious Anemia and Gastric Carcinoma. A. W. F. Jenner.—p. 529.
Significance of Circulation in Pathogenesis of Extrarenal Azotemias. P. Gösöri, L. Podhradsky and J. Kring.—p. 591.
Hemopoiesis and Endogenous Uric Acid. R. Opsahl.—p. 611.
*New Investigations on Elimination of Poliomyelitis Virus in Feces. C. Kling, G. Olin, J. H. Magnusson and S. Gard.—p. 629.
Hereditary Hemorrhagic Diathesis. E. Bruun.—p. 639.
Auto-Inhibition in Wassermann Reaction. B. Othagen.—p. 654.

Pernicious Anemia and Gastric Carcinoma.—A review of the literature regarding the connection between pernicious anemia and gastric carcinoma revealed to Jenner that the opinions of investigators are divided. He studied the fate of 181 patients with pernicious anemia and found gastric carcinoma in eight; but only seven of these can be considered in connection with the subsequent statistical studies. To affirm the relationship between pernicious anemia and gastric carcinoma, it must be demonstrated that the incidence of gastric carcinoma is greater among patients with pernicious anemia than among persons without this disease who belong to the same age groups as do the patients with pernicious anemia. The author made statistical studies, which revealed that the expectancy of gastric cancer among 181 patients would have been less than 0.3. It is important also to determine whether the incidence of gastric carcinoma among the patients with pernicious anemia is still within the limits of accidental occurrence. Accepted tables for statisticians and biometricians indicate that the occurrence of three or more cases of gastric cancer would noticeably exceed the limits of accident. The seven cases thus cannot be ascribed to accident, but a factor must be involved which is responsible for this high incidence. The author reaches the conclusion that the frequent occurrence of gastric cancer in cases of pernicious anemia is due to chronic gastritis, a condition nearly always present in cases of pernicious anemia. Chronic gastritis is the connecting link between the two processes. The author concludes that patients with pernicious anemia should be kept under observation for the possible development of gastric cancer. Carcinomas other than gastric ones do not have a higher incidence in anemic patients.

New Determination of Poliomyelitis Virus in Feces.—Kling and his associates point out that, whereas until recently it was necessary to resort to filtration through candles (Chamberland, Berkefeld and others) to demonstrate the virus of poliomyelitis in fecal matter, Trask, Vignec and Paul seem to have made an advance by substituting for filtration purification by means of volatile antiseptics such as ether or acetone. The authors describe their experiences with this method. In a subject presenting atypical symptoms of poliomyelitis (normal reflexes and absence of paralysis and of disturbances in sensitivity) the new method revealed poliomyelitis virus sufficiently virulent to provoke in monkeys typical experimental poliomyelitis. However, the method has been used in only a small material. It is impossible to give a definite evaluation as yet. The author tested specimens of the same feces after different intervals of storage. A table indicating the results of four different tests reveals that only the portion conserved for twelve hours produced a positive result, whereas the specimens conserved for fifty-three, 152 and 190 hours gave negative results. The authors are unable to say whether the virulence of the poliomyelitis virus is destroyed by the contact with the volatile antiseptic (ether) or by substances in the feces.